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Army

Land Warfare Doctrine 3-3-1

Employment of Army Aviation 2018

This publication supersedes *Land Warfare Doctrine 3-3-1, Employment of Army Aviation*, 2016.

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Australian Army

Land Warfare Doctrine

LWD 3-3-1

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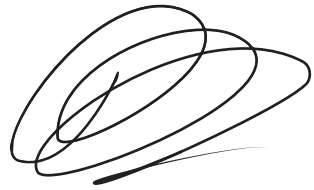

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Preface

Aim

The aim of the publication is to describe the capabilities of Army aviation in order to provide an understanding of its contribution to the comprehensive range of military activities within a whole-of-government approach to national security.

Level

This publication is written for new members of the Army. It provides corps non-specialists with an understanding of the capabilities of the organisation and its raise, train and sustain role. This publication is a useful reference for government and non-government agencies working with the Army.

This publication provides application-level doctrine. This is the capstone publication for Army aviation as part of the Land Warfare Doctrine Operation series. This publication describes the employment of Army aviation and complements *Land Warfare Doctrine 3-0, Operations* and *Land Warfare Doctrine 3-0-3, Land Tactics*. Detailed tactics, techniques and procedures are provided in the aviation Land Warfare Procedures - Combat Arms series.

Scope

This publication provides the following:

- a description of the operating environment for the employment of Army aviation
- an explanation of the role, capability, concepts of employment, command and control, and sustainability issues associated with Army aviation
- a description of the missions and types of tasks undertaken by Army aviation, including synchronising within the combined arms team
- a description of aviation in offensive, defensive, stability and enabling activities within a whole-of-government approach
- a description of the limitations of aviation organisations or capabilities, including specific environments
- a description of the organisation and its assets
- an explanation of the planning, tasking, coordination processes and control measures for the aviation capability
- an explanation of the unique combat service support structures and systems that support Army aviation, and their impact on operations

- an explanation of the employment of Army aviation in various physical environments.

While this publication will focus primarily on Australian-led operations, it will do so in recognition that the contribution of these capabilities will normally be part of a joint or larger coalition force in an interagency environment.

Summary of changes

Changes have been made to this publication and a familiarisation with all of the contents is highly recommended. Significant changes from the most recent rewrite are listed in the follow table.

Summary of significant changes
Army Aviation has changed the core function of airmobile to air assault and with this a new definition for air assault. This version has been amended to capture this change in function.

Contents

Chapter 1

Fundamentals of Army aviation employment

Aviation is not a substitute for any other member of the combined arms team; rather, it brings unique capabilities to the fight, capabilities that complement those of the other combat arms.[1]

Introduction

Land warfare is multidimensional. It involves the integration of military formations and the coordinated application of fighting power to defeat the enemy's will to resist. Modern land warfare is conducted across the comprehensive range of military activity illustrated in Figure 1–1. Army aviation is able to conduct a wide range of missions and move effectively between tasks across the comprehensive range of military activities.

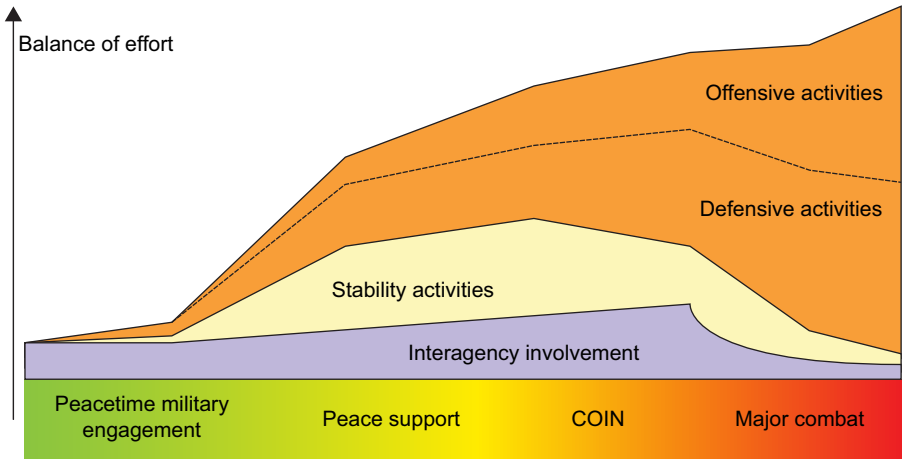


Figure 1–1: Range of tactical activities related to operation themes

Freedom of manoeuvre is inherent in any airborne force. While Army aviation operates predominantly in the aerospace environment, its primary task is to support land tactical actions in order to achieve land force objectives. Army

1. United States Army, *FM 1-100, Army Aviation Operations*.

aviation operates predominantly as part of a combined arms team within a joint or combined force, but it can also be employed as an independent tactical manoeuvre element where it is able to make full use of its inherent speed and mobility. Army aviation contributes unprecedented speed, mobility, firepower and agility to the land force. The full potential of Army aviation requires close liaison and synchronisation with the other combat arms.

Army aviation has made significant contributions to Australian military deployment operations in Vietnam, Malaya, Papua New Guinea, Bougainville, Timor-Leste, Afghanistan and Iraq.

This chapter introduces Army aviation: its role, characteristics, tasks, capabilities, principles of employment, limitations and contribution to land warfare.

Role

Army aviation

The role of Army aviation is to locate and defeat the enemy through the application of manoeuvre and firepower in a combined arms setting.

Attack helicopter regiment

The role of an attack helicopter (AH) regiment is to provide aviation reconnaissance, firepower and offensive support (OS) in a combined, joint or interagency environment.

Lift regiment

The role of a lift regiment is to provide air assault and combat support in a combined, joint or interagency environment.

Characteristics

The characteristics of Army aviation are as follows:

- shock action
- agility
- flexibility
- versatility.

Shock action. Shock is created by rapid and simultaneous actions that render an adversary incapable of making an effective response. Shock action disrupts the enemy's plans, destroys cohesion, saps morale and weakens the will to resist. Army aviation is able to manoeuvre rapidly throughout an area of operations (AO) and strike unexpectedly at enemy forward or rear areas. The ability of Army

aircraft to strike at the enemy at any time and from any direction adds to enemy confusion.

Agility. Agility is the ability to readily change from one task to another. This enables friendly forces to act more quickly than the enemy. Army aviation is highly agile and contributes significantly to the commander's capacity to control tempo. Agility is achieved through speed, mobility, versatility and communications.

Flexibility. The flexibility of Army aviation is derived from the ability of the aircraft to switch from one task to another, or to employ a mix of aircraft types on a range of tasks during a mission. For example, AHs may provide direct fire support to an attack in one mission and then on the next mission provide a convoy escort. Troop lift helicopters (TLHs) may provide air manoeuvre while other TLHs are simultaneously transporting humanitarian supplies or electoral material in another area. Medium lift helicopters (MLHs) may be used for stores and gun movement in one mission and then to transport casualties to a medical facility in the next. Mission objectives may be amended en route in response to changes in the tactical situation. The ability of Army aviation to rapidly adapt to changes in the tactical situation also provides the commander with an inherent flexibility in the land battle.

Versatility. Versatility is the ability to perform a range of tasks as shown in the section on tasks. Aviation can be employed throughout the spectrum of conflict and across the range of military activities. Aviation gains its versatility from its ethos, its equipment and its organisation. The versatility ethos is instilled through collective training and the application of mission command. The technology inherent in the aircraft and equipment enhances this versatility.

Tasks

The tasks typically allocated to Army aviation include:

- reconnaissance
- armed reconnaissance
- attack
- air assault
- ground escort
- air escort
- joint personnel recovery (JPR)
- airborne command, control and communications
- special operations
- casevac and aeromedical evacuation (AME)
- combat support and CSS

- air observation post
- forward air control (helicopter) (FAC[H])
- strike coordination and reconnaissance
- air interdiction (AI).

Reconnaissance. Air reconnaissance is the collection of information of intelligence interest, either by visual observation from the air or through the use of airborne sensors. Reconnaissance aims to obtain detailed information suitable for planning tactical missions. The AH regiment is equipped with the armed reconnaissance helicopter (ARH), which is Army's primary air reconnaissance platform. The ARH has both infra-red and low-light TV for gaining information. The ARH can carry a range of weapons depending on the mission. Reconnaissance missions include:

- point reconnaissance
- area reconnaissance
- route reconnaissance
- armed reconnaissance.

Armed reconnaissance. Armed reconnaissance is described as an air mission flown with the purpose of locating and attacking targets of opportunity. Armed reconnaissance missions are not flown for the purpose of attacking specified targets.

Attack. Any occasion that requires an AH to engage a target will normally require an attack. This is regardless of whether it is an advance, a defence or a mobile defence. An AH will normally conduct an attack by fire (ABF) or a support by fire (SBF). An attack by AHs may be in the direct fire role (by self-designating the target), by indirect fire (when the AH cannot see the target but fires on a spot designated by another platform) or by designating targets for others (AHs that cannot see the target, indirect fire or offensive air support [OAS]).

Air assault. An air assault is the manoeuvre of forces (combat support, CSS and combat) in vertical lift aircraft[2] as part of a combined arms team under the command of an Air Manoeuvre Force Commander.

An air assault capability enables commanders to concentrate combat power rapidly throughout a wide area. Air assault missions are an integral part of the land battle and may be conducted independently or in conjunction with other ground missions. They may include missions to seize objectives or to support flank and rear guards, covering force or screening tasks, and involvement in counter penetration or counterattacks. An air assault may also be part of an amphibious landing. The conduct of air assault missions will usually require a balanced

2. A heavier-than-air aircraft capable of vertical take-off, vertical landing, and low speed flight that depends principally on engine-driven lift devices or engine thrust for lift during these flight regimes

aviation manoeuvre force comprising airborne C2, lift aircraft (usually TLH), an AH for escort and possible fire support at the LZ, and follow-on AME support. An MLH may also be required for the carriage of follow-on forces, for artillery lift or for the movement of other aviation stores and equipment.

Escort. Escort missions are usually performed by AHs. An AH can screen and protect the force being escorted through the provision of early warning and immediate fire support. On occasions they may be performed by TLH and airborne troops. Escort missions are classified as follows:

- *Ground escort.* This involves a security escort to ground forces.
- *Air escort.* Air escort missions are conducted to support an airborne force during any phase of the mission dependent on threat.

Joint personnel recovery. JPR is the aggregation of military, civil and political efforts to rescue, release or recover personnel from permissive, uncertain or hostile environments whether they are captured, missing or isolated. Aviation could provide the rescue vehicle and/or escorts for the mission. AAAvn has no dedicated combat search and rescue assets, however, may provide support to combined search and rescue missions.

Airborne command, control and communications. Maintaining C2 is critical to any tactical action. Aviation commanders, by virtue of their unique situational knowledge and aircraft communication suites, are ideally placed to control manoeuvre forces. Aviation units may also provide communication enhancement through:

- the provision of airborne CPs
- the provision of airborne relay equipment
- the movement of LOs between units
- the verification of unit situations and locations
- the movement of commanders and staff.

Helicopters can be employed to distribute orders, maps, photographs and other urgently required documents throughout the tactical area of responsibility (TAOR) particularly during periods of poor communications or radio silence.

Special operations. Army aviation is able to support a range of special operations (including special recovery operations) through the provision of air assault; airborne command, control and communications; aerial fire support and CSS, including casevac. Figure 1–2 depicts Black Hawks providing support to special operations.

Figure 1–2: Support to special operations

Casualty evacuation and aeromedical evacuation. Any aircraft capable of carrying passengers can perform casevac. Casevac does not include dedicated medical support for patients onboard the aircraft. AME is pre-planned and the aircraft is configured with medical equipment and medical personnel to complete the task. Army aviation, with its MLH and TLH can be assigned to undertake forward and tactical AME. Dedicated AME is resource intensive in terms of aircraft and specialist personnel.

Combat support and combat service support. Air movement missions are conducted by TLH and MLH to reposition equipment, materiel, supplies and personnel in support of current and/or future activities. They may be conducted to meet isolated requirements on completion of an air assault mission or to sustain the ground force. Equipment may be internally loaded or externally slung.

Air observation post. Any appropriately trained aircrew can act as an air observation post or authorised observer to adjust indirect fire.

Forward air control (helicopter). Qualified aircrew can act as FAC(H) to coordinate and control OAS.

Strike coordination and reconnaissance. A strike coordination and reconnaissance mission is flown for the purpose of detecting targets and coordinating or performing attack or reconnaissance on those targets. It is distinct in that it does not require a FAC(H) qualification to conduct.

Air interdiction. AI is an air activity conducted to divert, disrupt, delay, degrade or destroy an adversary's capability before it can be brought to bear effectively against friendly forces. Noting that although AI is an integrated process, it is conducted at such a distance from friendly forces that detailed integration of each air mission with the fire and manoeuvre of friendly forces is not normally required.

Capabilities

Army aviation employs a combination of mobility, firepower, sensors, networked communications and aggressive action to dislocate and destroy the enemy. The AH regiment provides a reconnaissance and firepower capability. The lift regiment provides a land manoeuvre capability. Army aviation capabilities include:

- mobility
- firepower
- sensors
- networked communications.

Mobility

Army aviation enhances the mobility, speed and reaction of the combined arms team. The air movement of ground forces and materiel enables commanders to rapidly deploy their troops despite obstacles which preclude ground movement, and to rapidly adapt to changes in the tactical situation. The ability to deploy troops by air also provides the ground commander with a highly mobile and flexible force who can exploit enemy weaknesses in a timely manner.

Aviation forces have a freedom of movement that is not constrained by surface features such as water, swamps, forests, natural or man-made obstacles, or rough terrain. Army aviation is seldom restricted in the choice of operating terrain, as it can use landing sites requiring little or no preparation. TLH and MLH can carry large equipment as underslung loads and rappel or fast rope personnel when circumstances do not allow for landing.

Firepower

The principal means of applying firepower is the AH. Army aviation contributes to firepower by acquiring, designating and destroying targets with direct and indirect fire. The AH can engage point targets with precision-guided munitions (PGM), or suppress area targets using rockets and a turreted gun.

The secondary means of applying firepower is to direct the terminal effects of other offensive capabilities such as tanks, artillery, OAS and naval gunfire support.

Sensors

Sensors enable aviation to gather information, and detect, recognise and identify targets in a variety of weather conditions and light levels. When combined with the use of target designation or data link, one platform can designate or hand off a target to another platform (ground or air) who may be in a better position to engage the target.

Networked communications

Army aircraft are provided with a range of secure communication systems, including radio, satellite communications, and, increasingly a data link capability. This provides the commander with increased situational awareness which enhances decision-making and decisive action.

Principles of employment

Army aviation can be employed across the spectrum of conflict and throughout the comprehensive range of military activities. During all these activities, the principles of employing aviation remain the same. Aviation may be used as either the ordinary or the extraordinary force during offensive or defensive activities. The principles of employment for Army aviation include:

- mission command
- balanced groupings
- manoeuvre space
- centralised command and decentralised execution
- sustainment.

Mission command. Mission command is an organisational culture and a philosophy of command in which subordinates are given a clear indication of the commander's intent, a mission, and the assets and resources to achieve that mission. The tempo that can be achieved with aviation demands decisive, orchestrated action. Tempo will also result in rapid changes in situations whereby commanders are required to make decisions with little time for reflection or consultation with superiors. Orders to aviation must detail the commander's intent for achieving the immediate mission and the way in which aviation contributes to the overall plan. Orders to aviation must include a clear statement of tasks and their purpose. *LWD 1, The Fundamentals of Land Power* and *LWD 3-0, Operations* contain more information on mission command.

Balanced grouping. Army aviation provides a valuable offensive and defensive capability, but with some limitations as described in the section on limitations. AHs may be employed in isolation in a minimum of a pair. Any air assault will generally be accompanied by AHs. Combining Army aviation with other combat arms can enhance the capabilities and reduce the impact of the limitations of the

helicopters. Synergies achieved by combined arms teams often outweigh the sum of the component parts.

Manoeuvre space. Aircraft can move quickly and cover large distances in a short time. Operating above obstacles enables visual contact to be achieved over longer distances. AH weapons can be employed at ranges greater than other land force direct fire weapon systems. Aviation forces must therefore be given room in which to manoeuvre and apply their offensive capabilities. Even in a relatively static direct fire role an AH will require several square kilometres in which to select primary, secondary and alternate fire positions. An air assault formation may cover 5 km per minute in flight and can target LZs dispersed by up to 10 km.

Centralised command and decentralised execution. Aviation resources are limited in number and are of high value. Aviation also has large and specialised CSS demands (eg, aviation fuel, ammunition and spare parts) that cannot be met by other force elements (FEs). As a result, aviation assets are normally commanded at the highest level due to the requirement for detailed planning and resourcing, but with execution delegated down to tactical commanders.

Sustainment. Aviation uses large quantities of fuel, ammunition and spare parts. The logistics train to support aviation sustainment is specialised and involves large quantities of these resources. AAAvn Bde has no organic formation-level logistic support. If working as part of a combat team (CT) or battlegroup (BG), Army aviation relies upon external formation and force-level logistic support to remain functional.

Limitations

In order to maximise effectiveness and ensure success in the battlespace, commanders need to understand the following limitations to employing Army aviation:

- maintenance intensity
- personnel endurance
- aircraft performance
- environmental and weather effects
- logistic support
- persistence
- vulnerability.

Maintenance intensity

Aircraft availability is affected by the tempo of activities and the availability of spare parts and maintenance personnel. The maintenance system retains sufficient flexibility to allow an increase in tempo for limited periods. However, this will result in some reduction of the force at the end of the period until the essential

outstanding maintenance is complete. Commanders may need to trade a reduced aviation capability prior to an important mission or phase for increased aircraft availability during the mission.

Aircraft require both preventative maintenance and on-condition maintenance. Even relatively small repairs can have major implications for aircraft safety and are therefore highly regulated. Aircraft availability will increase in relation to the suitability of a deployment location for maintenance. Ideally, aviation units should be located in a well-protected area with good work areas, infrastructure to allow 24-hour maintenance, and the ability to use white light and power-generating equipment. Aircraft will require test flying after any major servicing or after adjustments to the power train or flight controls.

Sustained deployed operations require consideration for rotating aircraft through deep maintenance, either in theatre or back to Australia. Fleet management and planning becomes the driving source of available flying rate of effort, and must be factored into any operational planning.

Personnel endurance

The consequences of fatigue on both aviation maintenance crews and flight crews can be disastrous, resulting in the loss of assets and life, and reducing the combat power of the land force. The degree of fatigue to be tolerated in a given situation must be balanced with the importance of the mission and the availability of alternative means of providing that service. Aviation commanders and LOs have the important role of providing advice on the rate of effort for flying activities and the management of fatigue. The management of fatigue will become critical during all periods of high-tempo activity. Orders for limits on the endurance of maintenance personnel and aircrew are issued from the highest levels of command and are necessary to preserve the safety of crews, passengers and assets as well as mission integrity.

Aircraft performance

Altitude and temperature. Engine power and lift are affected by air density. A reduction in air density caused by a high altitude and/or a high temperature may produce a significant reduction in payload and manoeuvrability. As the temperature and altitude increase, the load-carrying capacity of helicopters decreases.

Payload and range requirements. The payload that can be carried is the difference between the maximum allowable all-up weight of the aircraft and the basic aircraft take-off weight, including fuel. The range of an aircraft depends on a number of factors, one of which is the fuel load carried by the aircraft. It is possible to reduce the weight of the aircraft by reducing the fuel carried and, therefore, its range; this will increase the payload available. Payload and range are two critical, inversely variable factors that need to be considered during planning.

External and underslung loads. Loads that are too large to fit inside an aircraft or too heavy for the floor loading capacity may be carried as external loads. When an external load is carried, it may be necessary to reduce airspeed to prevent the

load from becoming unstable in flight. An external load will also reduce manoeuvrability and hinder terrain flight. Nevertheless, the carriage of a cargo externally will normally offer the most efficient method for moving large quantities of cargo.

Environment and weather

Weather is the main environmental limitation to the employment of Army aviation. Rules governing the minimum requirements for meteorological conditions are set by military regulations. Low cloud, heavy rain and low visibility are the most likely conditions to restrict flying activity.

Visibility. Helicopters are capable of operating in low visibility and under a low cloud base. Speeds decrease as visibility is reduced to the point where heavy rain, fog, dust, sand or smoke may restrict or stop flying. While low visibility does hinder visual detection by the enemy, the helicopter remains vulnerable to detection by radar and, to a lesser extent, thermal sensors.

Cloud. Most aircraft can be flown without visual reference to the ground, but this must be conducted at a safe height above obstacles, with the ability to descend to a landing site by visual reference or with the assistance of electronic guidance. In a tactical setting, visual reference is required during the majority of activities to maintain situational awareness of the battlespace and to avoid being detected or destroyed by the enemy.

Wind. Strong surface winds may make the starting and stopping of rotors, as well as the take-off and landing of aircraft, hazardous to equipment and personnel. Very strong winds may necessitate the suspension of flying activity. Wind can also produce strong turbulence around obstacles or natural features such as mountain ranges and valleys. In extreme conditions, turbulence can lead to catastrophic damage to an aircraft. Aircrew will operate away from areas of known turbulence and/or modify their flight, for instance, by reducing speed.

Precipitation. Army aircraft can operate in rain; however, tropical downpours, blowing snow, hail or sleet will affect or temporarily stop aircraft operating. It may be necessary to task engineer resources to prevent landing sites from becoming unusable after heavy or prolonged rain. Additionally, prolonged periods of heavy rain, especially in the tropics, may cause widespread electrical problems, with aircraft requiring increased preventative maintenance and the increased use of spare parts.

Dusty conditions. Dusty conditions can cause significant problems for aircraft. Visual reference may be lost during take-off or landing which can cause disorientation and increase the possibility of an accident. Staff undertaking mission planning should consider dust signatures and their possible impact on friendly and enemy forces. This is particularly relevant for air assault missions where a number of aircraft may be in the LZ at one time, or during reconnaissance and attack missions where extended low-level hovering may be required. Dusty environments further increase the risks for night activities, where crews operate with less overall visual orientation than during daylight hours. Activities at night in

dusty conditions and those requiring precise techniques, such as flying and landing in formation, require detailed planning.

Light levels. Periods of low light will hinder the conduct of some activities. In the transition from night to day or day to night there is a crossover period when night vision equipment, used towards the rising or setting sun, is not as effective as usual. Flight at night is affected if there is cloud cover, no moon or low levels of moonlight at less than 33 degrees above the horizon. High ambient light is also a possible hindrance in certain conditions. Where a man-portable air defence system or an optically acquired anti-aircraft artillery threat exists, Army aviation flights may be reduced in periods of very high illumination. Additionally, in flat terrain, particularly above 80 per cent illumination, aircraft will need to increase their flying height above terrain due to the inability to discriminate between ground features. Although there are significant tactical advantages to operating at night, darkness requires more detailed pre-mission planning and may impose some limitations on the employment of aircraft, similar to those in low light and dusty conditions. When aircraft are equipped with night vision devices (NVDs) and GPSs, some of the limitations are reduced. In poor weather, cloud cover will often reduce light levels to the extent that aircraft will have to operate at higher altitudes, follow simpler flight paths and operate at slower speeds. Aircrew operating NVDs accumulate fatigue at a greater rate than those operating during daylight. Additional control measures must be in place to identify friendly forces as distinct from enemy forces.

Logistic support

Army aviation relies heavily on CSS, and operating nodes are a key vulnerability. The positioning of forward arming and refuelling points (FARPs) and forward operating bases (FOBs) is a critical enabler of aviation tempo but will also be a significant vulnerability. FARPs and FOBs usually have detectable signatures (eg, vehicles and radiofrequency) and a degree of location semi-permanence. They are also likely to be sparsely manned, thereby limiting their ability to provide their own physical security. The number of FARPs or FOBs available is also finite. Hence, they become a critical resource and their protection must be considered in planning.

Persistence

Unlike other ground forces which can halt in location and hold ground aviation is required to operate from FOBs and FARPs and its ability to persist in the battlespace is limited by aircraft endurance, crew endurance and transit distance between basing locations and the objective or AO. Persistence can be increased by dedicating multiple aircraft and crews, and by forward basing FARPs but ultimately, at some point, resources will reach their limit and aviation operations will cease. The aviation commander can advise on flying rates to provide sustained support. Proper synchronisation of Army aviation can reduce the impact of this limitation.

Vulnerability

Ground threats. Army aviation deployment sites are high-value targets; protection of these assets must be considered during planning. Aviation personnel are required to perform specialist functions vital to tactical actions and achieve this task most effectively when not called upon to perform local security tasks. Due to the limited number of personnel within an aviation unit, a compromise must be made between the security of operating bases and the provision of support to aviation activities. Army aviation units may deploy FOBs and FARPs, and the consideration of security for these will also need to be balanced against the threat and the availability of friendly forces for the security task.

Air threats. Although modern aircraft have an increased capability to survive in the battlespace, and most are equipped with passive and active self-protection devices, the majority remain vulnerable to a wide range of threat weapons. Helicopters can survive to discharge their roles effectively, providing they are employed with due regard to the threat opposing them and, preferably, as part of the combined arms team. Aircraft such as the AH and the TLH are equipped with protection systems, but this does not render them invulnerable. All aircraft will attempt to remain concealed from electronic or visual detection.

Contribution to land warfare

The modern battlespace is an environment of evolving lethality, density of battle, exploitation of complex terrain, operational uncertainty and information dominance. These characteristics combine to produce a range of challenges to land warfare where soldiers fight in a multidimensional battlespace against forces seeking to develop and exploit any advantage in order to win the land battle.

Conduct of land warfare. Army aviation is critical to the success of military activity throughout the spectrum of conflict and across the range of military activities. Army aviation is one of the primary means by which a commander can gain information, apply lethal and nonlethal force, and transition rapidly between lines of effort. Aviation is able to patrol, gain information, provide precision fire, carry airborne forces to seize critical locations, support combined arms assaults on enemy positions and defend locations against attack. Army aviation can be rapidly re-roled or re-tasked to provide humanitarian assistance and disaster relief (HADR) or to assist in stability activities.

Spectrum of conflict. Army aviation is capable of readily meeting tasks throughout the spectrum of conflict. Aviation can support disaster relief as part of peacetime military engagement, monitor a ceasefire as part of a UN-mandated operation, support cordon and search tasks as part of counterinsurgency, and participate in major combat. Much of the aviation capability is applicable across both military and non-military tasking. For example, the AH sensors used for detecting and engaging targets are also useful for search and rescue, and for monitoring ceasefires. The TLH flying from one area to another does not require any different piloting skills or change in aircraft configuration from carrying troops

in a combat situation to carrying humanitarian supplies in a disaster relief situation. In both cases, the only change is in the tactics employed, which will vary with the threat.

Range of military activities. Army aviation is able to operate throughout the range of military activities. Aviation forces are flexible, and able to transition between and across multiple lines of effort. For example, AHs may be used in an offensive tactical action to remove organised resistance, and to provide protection and security to a threatened population through patrolling; and TLH may be used to transport vital stores to assist humanitarian efforts or evacuate personnel from hazardous situations, and to train the air element of local security forces. The inherent flexibility within the aviation force allows one element to provide the secure environment in which the other lines of effort take place.

Chapter 2

Army aviation organisation

Introduction

The regiment is Army aviation's primary structure for raising, training and sustaining the aviation capability. In peacetime aviation assets are grouped into homogenous regiments for efficiency and economy. For operations the Army aviation capability is task-organised as required to meet the expected missions or tasking.

Task organisation is a key element of combined arms teams. Task organisation is the regrouping of forces for specific missions and phases within actions to produce a range of capabilities in a single organisation. In short, the force is tailored for the specific task. A task-organised force consists of an appropriate unit HQ with subordinate sub-unit components grouped to meet the requirements of the task. The aviation regiment is able to form a BG HQ and several CT HQs. Aviation squadrons may also be attached to a BG formed by another combat arm.

This chapter describes the C2, staff, units, and levels and types of support which contribute to the Army's aviation capability.

Command and control

Aviation generally employs centralised command and decentralised execution. Normally, the senior aviation commander commands all aviation units allocated to the formation. Assets of a regiment may be allocated to supported units or formations under all command states except full command. This is due to the requirement for the following:

- the commander to retain the flexibility and responsiveness of aviation assets
- the aviation commander to retain technical command and technical control
- specialist aviation logistics which supported units and formations are generally unable to provide
- control and coordination of aircraft fleet engineering management.

Aviation units selected for missions will normally be grouped as a task force (TF) asset. To facilitate the C2 of Army aviation FEs, a TF HQ would normally include an Army aviation command and control element (AACCE) tailored for the activity and drawn from elements of HQ 16 Avn Bde. The AACCE controls and

coordinates the tasking of Army aviation FEs assigned to the TF on behalf of the TF commander. The commander of the AACCE provides staff advice to the TF commander and will normally be the senior Army aviation commander in the theatre.

Aviation support must be agile and responsive across a range of tasks. This is most effectively achieved when C2 of Army aviation is vested in the TF HQ. This enables the senior commander to quickly shift the priority of effort in order to exploit or respond to developing situations in the battlespace.

Aviation command

As a component of Forces Command, HQ 16 Avn Bde commands aviation units until they are deployed or allocated to another HQ. When command of an aviation force is transferred to another organisation, HQ 16 Avn Bde retains technical control and, through DGAvn, the responsibility for operational airworthiness. The HQ 16 Avn Bde has the responsibility to raise, train and sustain the land force aviation forces not committed to operations and to reinforce those on deployment through the respective HQ.

Airworthiness authority

Airworthiness is a key process that ensures that design, manufacture, maintenance, and operational elements are matched to the approved operating configuration, role, environments and missions of an aviation system. It provides commanders with the confidence to employ an aviation system in a manner that realises the potential of an effective, ready and sustainable capability. In this manner, airworthiness management is mission focussed by providing a safe effective framework in which to deliver capability. The authority for the airworthiness of all Defence aircraft is vested in the Chief of Air Force but operational airworthiness responsibilities are delegated down the chain of command across Service boundaries.

Operational airworthiness

Operational airworthiness ensures that aircraft are operated in approved roles, with correct mission equipment, by competent and authorised operators according to approved procedures and instructions, and under a system of supervision and monitoring. A rigorous system of auditing for compliance is conducted on a regular basis while in barracks and on deployment. Further, operational airworthiness seeks to balance risk and operational flexibility by ensuring that aircraft are operated in their intended roles and environments, with acceptable risk to the lives of the aircrew, other Defence members and the public. COMD FORCOMD is the Operational Airworthiness authority for Army systems within Army.

Airworthiness advice

DGAvn is the authority for airworthiness of AAAvn aircraft and aviation support systems (eg, aerodromes).

Aviation advice

Aviation commanders and aviation specialists provide advice to senior commanders on the employment of aviation forces and technical aviation matters. The appropriate rank and experience levels of aviation commanders and aviation specialists providing advice are as follows:

- captain to a battalion or regiment
- major to a brigade
- lieutenant colonel to a joint task force (JTF)
- post-unit command lieutenant colonel or colonel to an offshore JTF or a coalition force.

Staff

Each Army aviation regiment provides an RHQ to enable a unit-sized BG to be commanded and controlled as a fighting unit. The responsibility for command of the unit or BG rests with the CO, who exercises command through their squadron or sub-unit commanders. An aviation regiment is commanded by a lieutenant colonel.

The staff functions which exist within aviation regiment HQs are as follows:

- S0 – command group consisting of the CO, 2IC, ADJT and RSM; when responsible for providing the aviation BG HQ may include an XO position
- S1 – personnel
- S2 – currently not organic to the aviation regiment and must be sourced from supporting agencies
- S3 – consisting of the OPSO, S33, S34, S35 and the aviation operations manager
- S4 – a function advised by OC combat logistics support squadron (CLSS) (S4 LOG) and OC technical support squadron (TSS) (S4 MAINT)
- S5 (subordinate to S3) – responsible for long-term planning
- S6 – communications and information systems cell
- S7 – training
- regimental standards officer
- regimental aviation safety officer
- regimental gunnery officer
- regimental electronic warfare officer.

The BG plan is controlled by the unit staff from RHQ coordinated by the OPSO. At squadron level, the squadron staff coordinate the plan. RHQ is the central element through which orders and information pass. RHQ provides the CO with staff and the communications facilities required to command the unit in peacetime and a BG on deployment.

Each regiment can provide a regimental LO to represent the CO at formation or flanking HQ. Each regimental LO is responsible for providing specialist aviation advice to higher HQ and for maintaining information flow between the regiment/BG and supported units.

HQ 16 Avn Bde can provide the AACCE required within the JTF or combined TF. When necessary, it will also provide staffs who are experienced in aviation logistics, engineering, risk management or airworthiness for the initial planning phase or for ongoing staff advice.

Levels and types of support

Aviation units are homogenous in peacetime but are employed in BGs and CTs when deployed. Army aviation is employed as part of a combined arms team and, while the grouping is dependent on the task, synergies are achieved by combining the three manoeuvre combat arms of infantry, armour and aviation. The proportion and capabilities of the Army aviation capability will be balanced to meet the needs of the task and the scarcity of the resource.

A BG is described as a combined arms grouping task-organised for a specific mission, based on a manoeuvre unit HQ. Each Army aviation regiment can generate one BG HQ with integral support but it may require specialist equipment. While any manoeuvre unit HQ can command other manoeuvre sub-units, the ability to communicate effectively with sub-units is to be considered when establishing an effective BG. All Army aviation regiments and sub-units can task-organise effectively with all other combat, combat support and CSS elements as required by the task, the threat and the terrain.

Units

16 Aviation brigade

16 Avn Bde exercises command and technical control over aviation units. Annex A describes the Brigade's non-operational structure. Within Army aviation, units are referred to as regiments, sub-units as squadrons and sub-sub-units as troops. Each aviation unit contains all the CSS elements required to enable the regiment to operate. The Army aviation units are as follows:

- an attack regiment
- a lift regiment

- an SO regiment.

Attack regiment

An attack regiment consists of an RHQ, two attack squadrons, a CLSS and TSS. Each attack squadron consists of two AH troops.

The primary equipment of the attack regiment is the Tiger ARH. Other principal equipment includes vehicles and communications suites for C2, and a significant rearming and refuelling capacity.

Lift regiment

A lift regiment consists of an RHQ, two TLH squadrons, an MLH squadron, a CLSS and TSS. Each TLH squadron can deploy two lift troops. The primary equipment of the lift regiment is the MRH 90. The primary equipment of the MLH squadron is the Boeing CH-47F Chinook. Other principal equipment includes a significant rearming and refuelling capacity.

Special operations regiment

An SO regiment consists of an RHQ and two SO squadrons. The SO squadron can deploy an undisclosed number of troops. The primary equipment of the SO regiment is the S-70A-9 Black Hawk helicopter. Other principal equipment includes a significant refuelling capability and specialised C2.

Annex:

Annex A to Chapter 2

Aviation brigade non-operational structure

The aviation brigade, depicted in Figure 2–1, is predominantly structured to meet the Army's non-operational requirements of Army aviation. Aviation forces are task-grouped to meet operational requirements.

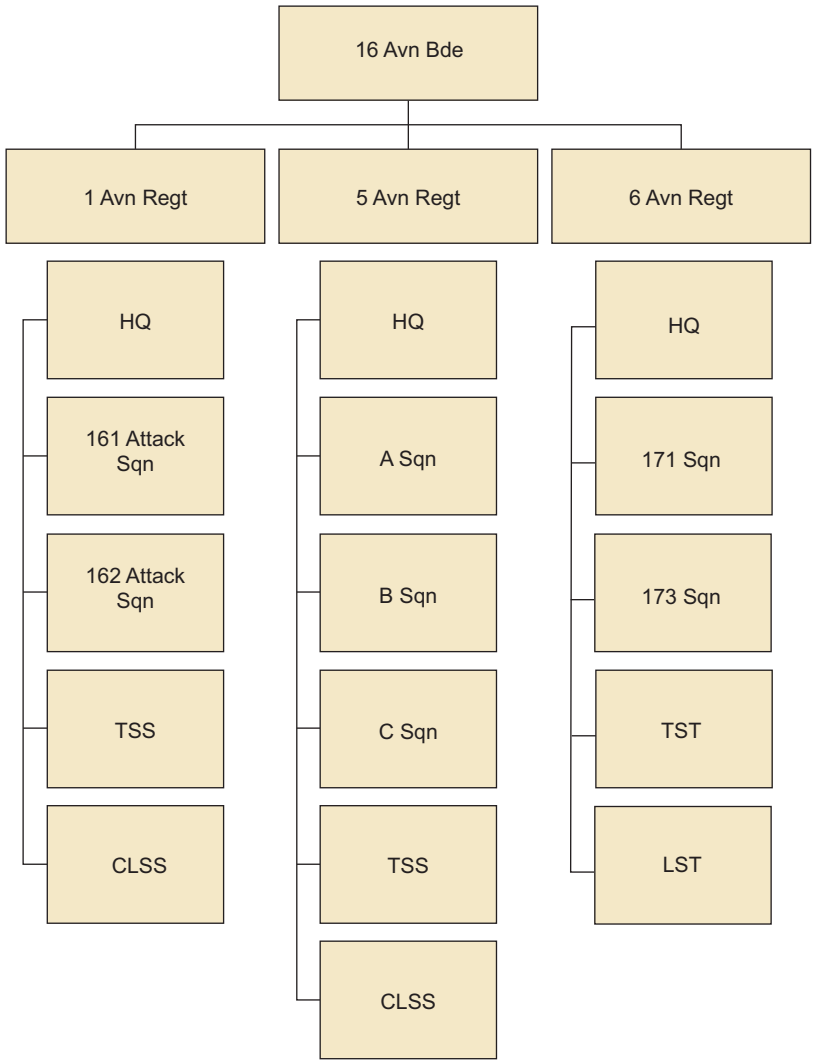


Figure 2–1: Aviation brigade non-operational structure

Chapter 3

Planning

Introduction

The time to prepare and plan for a mission is often limited. Commanders and staff must follow well-developed planning procedures; enhanced by sound training; clear SOP and well-developed TTPs. Extensive use of the staff MAP and the individual MAP will in turn be supported by the combat MAP at lower levels.

Army aviation planning starts with the ground force scheme of manoeuvre. Aviation plans centrally in order to synchronise lift and attack aviation, and to incorporate external agency support (eg, joint fires; intelligence, surveillance and reconnaissance; and electronic warfare). Detailed coordination with the ground force commander achieves the best use of resources and effects in support of the scheme of manoeuvre. Aviation BGs divide planning into two distinct streams, deliberate and high-readiness tasking.

Deliberate planning involves longer lead times and the detailed integration of effects in order to maximise mission success in complex missions, such as air assault, attack operations, reconnaissance, and strike coordination and reconnaissance.

High-readiness tasking involves a reliance on situational awareness, TTPs, SOPs and battle drills in order to provide the ground force commander a rapid response to changing battlefield situations. Tasks such as quick reaction force, casevac and troops in contact support fall into the high-readiness tasking category.

Special operations follows a detailed and specific planning methodology which is designed to support the requirements of special operation’s units and tasks.

This chapter details the FE options, C2 planning, information actions, threats, coordination measures and coalition operational considerations for the employment of Army aviation.

Force element options

Army aviation FE options for deployment range from the commitment of troop-sized elements to that of the entire land force aviation capability. The aviation troop with appropriate C2 (usually an element of the SHQ) and CSS is considered to be the base level of deployable capability. Single AHs are rarely deployed for any reason due to the requirement for mutual support. Any air assault

will generally include AHs for escort and fire support to the airborne and ground forces.

Army aviation FEs include an appropriate C2 cell which is generally integrated into the supported unit/formation HQ. FE options could include:

- a troop assigned operational control to a JTF
- a troop or squadron assigned operational control to a manoeuvre BG
- a composite aviation regiment assigned under command to a JTF.

Command and control

HQ AAAvn through the force generation cycle generates and maintains the following FEs:

- The ready aviation BG which is certified on exercise with a supporting relationship to the ready brigade, the ready battalion group and the amphibious ready group.
- The readying aviation BG which supports the readying brigade's road to war series of exercises. It achieves certification alongside this formation. The readying aviation BG may support the amphibious ready group during training exercises.
- The ready special operations SQN which maintains perennial SO capability in support of SOCOMD.

Planning

The MAP is the staff planning tool for Army operations. To be effective, Army aviation needs to be fully integrated within the joint and land force MAP at all levels. Once the mission details are finalised, aviation-specific planning begins. Army aviation divides deliberate planning into three distinct phases; the air mission coordination meeting, the air mission brief and the aircrew brief. This process minimises the burden on the ground force commander by ensuring that only mission-specific requirements are briefed at the appropriate levels. Considerations important to aviation missions will be discussed in the following paragraphs.

Pre-deployment factors

Force assignment considerations. The following are the four major considerations used to determine the structure of the aviation FE:

- *Scope.* In determining an aviation FE structure, planners must conduct a detailed assessment of the threats, complexity, operating environment, size of the supported JTF and the anticipated duration of the activity. Once the

smallest force is defined allowances then need to be made for redundancy, sustainment and force rotation.

- *Capability requirements.* The capability requirements are the aviation troops, squadrons or regiments required to achieve outcomes as part of combined arms teams or through independent action. The capability requirements also include the personnel, equipment and support systems required for force generation and for the sustainment of the aviation forces.
- *Tempo.* The tempo requirements dictate the groupings of combat and CSS elements required to maintain the specified readiness and serviceability levels. Army helicopters cannot remain on station indefinitely. They must regularly return to an FOB or a FARP to rearm, refuel, replan and allow the crew the rest. High tempo levels will involve sufficient assets to allow some elements to be in transit or undertaking administration activities without compromising the level of capability available to a commander.
- *Command and control.* An appropriate C2 element is required to command deployed aviation FEs, staff the AACCE and advise the commander. This will normally be provided by the aviation brigade HQ.

Deployment options. Army aircraft can be deployed to a TAOR in a number of ways, including:

- *Self-deployment.* Self-deployment is the aircraft with very limited C2 and CSS. This is normally the most efficient means over short distances. Over longer distances the aircraft will need either to refuel (ground refuelling services) or to carry additional fuel in external tanks. These external tanks are for administrative moves only as they are vulnerable to hostile fire and, in the case of an air assault aircraft, will impact on the ability of troops to deplane rapidly. External tanks will usually be removed prior to combat. Ground support elements will still need to deploy by the most appropriate means. Flying will generally not commence at the destination until the maintenance and mission support elements have arrived in location. Step-up elements of these capabilities may have to leave before the aircraft in order to be there when the aircraft arrive.
- *Air transport.* This involves the carriage of aircraft, personnel and stores by air (eg, by C-130, C17, C5 Galaxy or leased civil cargo aircraft). This will always require partial disassembly of the aircraft prior to loading, and reassembly and test flying at the air point of disembarkation. Ground support equipment (eg, cranes) will be required at both ends of this transit for disassembly and reassembly. The transport aircraft will carry only one or two helicopters, and the number of lifts to transport an entire squadron is considerable. While aviation maintenance staff are skilled at stripping and reassembling the aircraft, several days should be allowed at each end of the flight for this to happen.
- *Sea transport.* The transportation of aircraft by sea requires specialist preparation and storage of the aircraft. Salt contamination and corrosion are

key considerations if this method of deployment is used. With the introduction of the amphibious assault ship, multi-purpose, sea transport and amphibious operations will become the primary means of deploying AAAvn assets in the local and global operating areas. These factors are further detailed in Chapter 4.

Crew experience. The complexity of the expected missions will drive the crew selection process. The level of in-theatre training, task-specific qualifications and competence, or recent experience for flight crew and maintenance personnel will affect the preservation of aviation capability. Once the crews are in-theatre a level of currency training will still be required to ensure that they remain capable of providing high levels of support in all the areas required.

Aircraft rate of effort. The planned rate of effort for Army aviation missions must be forecast to the unit technical support staff and Army aviation. This ensures that adequate resources (eg, aircraft, repair parts, manning and equipment) and sufficient numbers of aircraft, with hours clear from major service, are available. Aviation LOs will advise commanders and planning staff on how best to maximise availability. In general, planning staff should develop a sustainable flying program and where necessary adjust tempo to allow for periods of surge support.

Recovery of aircraft and aircrew. A theatre aircraft recovery or destruction policy must be established prior to commencing the deployment. This policy sits with the highest HQ in theatre. Australian forces must communicate our destruction policy to the high HQ for incorporation into the recovery plan. In any event the crews will need to be recovered, even if the aircraft is to be destroyed, and contingency plans should be made for these recoveries. Further information on aircraft recovery is detailed in Chapter 8.

Bases and infrastructure. FOBs play an important role in the generation of tactical projection, sustainment and tempo. Information regarding the establishment of FOBs is detailed in Chapter 8. Where practicable, and for sustained deployments, aviation is accommodated at sites which facilitate safe maintenance and flying, and minimise unscheduled maintenance or environmental damage to aircraft. These sites will also include appropriate facilities for the provision of 24-hour CSS. Major support infrastructure includes airfields, maintenance areas and hard standing. Communication support and the provision of information technology services are often required for the generation and sustainment of aviation effort. All bases need to provide an appropriate level of security as aviation assets are high-value targets for the enemy.

Mission factors

Environment. There are a range of environmental factors that impact flying. These are discussed in Chapter 1 and are considered in detail in Chapter 9.

Support to missions. Mission support is a significant factor in aviation planning. It includes all materiel support required to prepare, launch, sustain and reconstitute aviation capability. Key support requirements include:

- *Fuel and ammunition.* FARPs are a key measure to extend the range of the aircraft.
- *Maintenance and combat service support.* Issues relating to these factors are discussed in Chapter 8.
- *Mission support.* Aviation CPs will be deployed to support any aircraft mission.

Mission conduct. Mission conduct is integral to the success of flying and has the following elements:

- *Synchronisation.* Synchronisation is achieved during planning. Synchronising Army aviation forces with manoeuvre forces and OS is crucial to the achievement of combined arms effects. It is important that aviation readiness states, and effective decision points and triggers for the use of aviation are implemented appropriately. Aircraft and crews must be held at the correct mission readiness levels to execute tasks or react within the required time frame. Holding aviation forces at a continuous high-state of readiness will have a cost in terms of fatigue and maintenance.
- *Site conditions.* Information is needed on the conditions, dimensions and other aspects of the pick-up zone (PZ) and LZ for air assault, air movement and CSS missions. Modern technology provides various means of acquiring information for planning usually through external support agencies such as geospatial organisations and intelligence resources.
- *Combat identification.* A plan for the combat identification of friendly forces by day and night is necessary to avoid fratricide and to ensure the adequate and safe coordination of firepower.
- *Planning cycles and timings for missions.* The activity cycle and optimal activity lead times must be determined. Time must be available for crews to interpret weather conditions, plan the flight and arrange support coordination. Planning timeline increase when there is a need to request and coordinate supporting or enabling activities prior to a mission.
- *Communication and information systems.* The planning for effective communication needs to be conducted prior to the aviation force being deployed and is to be considered before the conduct of each mission. Aviation working at full capability requires significant bandwidth and given the large distances over which they operate, it predominately relies on beyond line of sight communication. For detailed integration between air and ground elements significant planning and standardisation is required between units to achieve effective communication. Unlike most ground units aviation passes through multiple TAORs during a mission and it needs to be able to communicate with tactical HQ throughout the AO.

- *Aeromedical evacuation.* When Australian aviation provides dedicated AME, the area of responsibility and reaction times need to be carefully planned. AME assets need to be directly linked to the theatre patient evacuation coordination centre. For mission planning the coverage of AME assets must be considered when evaluating risk.

Battlefield damage repair and recovery of aircraft. Battlefield damage repair and recovery of aircraft requires capabilities to be included in the theatre and mission plans. The recovery of battle-damaged or unserviceable aircraft in hostile areas can be a complex activity which must be planned and resourced. A theatre aircraft destruction policy will be established prior to deployment.

Mission planning systems

There are multiple mission support systems employed to assist in flying missions. These systems provide situational knowledge (future and current) and allow aviation mission planning via an automated electronic system. Mission support systems also enable aircrew to electronically submit flight plans to HQ which allows airspace coordination agencies to plan airspace control for future missions. These systems can operate in a deployable or fixed configuration and include:

- a theatre-level battle management system
- an aviation CP mission management system
- an aviation flight planning system
- enabling systems which may be incorporated such as:
    - live video feeds
    - augmented battle tracking systems
    - joint fire control systems
    - coordination systems
- various tactical data links which may be available to an aviation CP to enable the above systems.

Planning processes

JTF or theatre-level orders which affect AAAvn or require staff input include the some of the following orders:

- WNGOs
- deployment orders
- air operations directive
- air task orders
- airspace control and coordination plans
- air support coordination plans

- targeting directives
- ROE
- the JPR plan.

Information actions

Information actions consist of the following:

- influence
- counter-command
- command and information protection.

Influence. Influence has the primary purpose of changing the perceptions, wills, attitudes and behaviours of target audiences, both enemy and civilian. Relevant tools include military public affairs, civil–military cooperation and information operations. The majority of aviation activities can contribute to influence. In the offensive, the use of AHs will force the enemy to either fight or run. The presence of AHs conducting patrols and providing on-call firepower provides both significant protection to those seeking protection, and a serious threat to those seeking to do damage. The ability to apply precision fire at significant range is sure to influence the behaviour and attitudes of other combatants. By defeating armed aggression, aviation plays a major part in the security of protected populations and the safety of our own forces. The flexibility of TLH/MLH to carry out HADR, and to transport refugees, VIPs, casualties and quick response units also has a positive effect on the population of the host nation (HN).

Counter-command. Counter-command is aimed at deceiving, disabling or destroying enemy commanders, and disrupting, degrading, destroying or denying the information systems and information they rely upon. Relevant methods include physical attack, deception, electronic attack and computer network attack. The attack regiment also fights for information. It conducts armed reconnaissance missions seeking to gain information, and this may be with or without the knowledge of the target group. Army aviation is also ideally suited to the physical attack role; the primary contribution of aviation to counter-command actions is generally active rather than passive. Aircraft have a significant heat, noise and electronic signature which assists the enemy to detect aviation units. This means that specific steps must be taken to reduce the signatures and implement deception measures. Every plan involving the use of Army aviation should consider both signature reduction and a deception plan. Other measures that might also be considered include:

- electronic countermeasures
- indirect flight paths
- dummy approaches to non-intended landings

- the dispersion of formations over a wide area
- camouflaging aircraft on the ground
- the use of concealed approach and take-off routes
- hiding critical CSS and HQ elements
- aggressive counter-reconnaissance.

Command and information protection. Command and information protection is aimed at protecting our own commanders and the information systems and information on which they depend. Relevant methods include electronic protection, computer network defence and operations security. Aviation maintains standard information protection measures for communications systems and will, when necessary, fight to protect our own command elements. Army aviation is ideally suited to fighting for information rather than with it.

Threats

Significant threats to Australian land forces derive from conventional and unconventional forces. Unconventional threats may be associated with non-state actors, issue-motivated groups and terrorists. Threats may appear in various stages of transition from industrial- to information-age sophistication, and may possess a range of capabilities from simple explosive devices to computer network attack and electromagnetic pulse. Australian forces must be prepared to operate in environments ranging from unconventional forces and/or low-technology threats up to and including conventional warfighting between nations employing sophisticated technology.

The primary threats to Army aviation include:

- direct fire
- indirect fire
- laser systems
- hostile air
- obstacles
- explosive devices
- electronic warfare
- CBRN
- ground attack.

Direct fire. Direct fire is most effective if the target is within range, relatively static, easily identifiable, taking no evasive action and is not threatening the firer.

Lethality will increase if the system has been rehearsed or previously sited. Significant forms of direct fire include:

- the man-portable air defence system
- anti-aircraft artillery
- the main and secondary armaments of armoured systems
- heavy calibre machine guns and other small arms
- other ground-based ballistic weapons (eg, rocket-propelled grenades).

Indirect fire. Enemy artillery, including multiple-launched rocket systems, pose a threat to FOBs, LZs and FARPs. Indirect fire relies on electronic, acoustic or optical direction-finding by enemy forces.

Laser systems. Laser systems can blind the aircrew, disable sensors and prompt unnecessary evasive action by triggering the laser warning system in the aircraft.

Hostile air. Manoeuvre forces may have to operate in situations of less than air superiority, requiring evasion of enemy fighter aircraft and armed helicopter engagements.

Obstacles. All low-level missions, especially missions in urban environments, require rotary wing (RW) aircraft to fly in close proximity to man-made obstacles such as wires and towers.

Explosive devices. Conventional and improvised explosive devices can threaten the security of LZs and fire positions. Devices such as anti-helicopter mines and acoustically activated denial systems have been developed to target helicopters and deny use of landing areas.

Electronic warfare. Electronic warfare threats include jamming, direction finding and monitoring. All electronic emissions from aircraft systems may be detected; these include data transmissions, aircraft sensors and voice radio communications. The electronic warfare threat is significantly increased if enemy forces see regular patterns in flying or aircraft tactics, and can site and cue detection systems to locate and target aircraft.

Chemical, biological, radiological and nuclear systems. The planning factors and effects of operating in a CBRN environment are detailed in Chapter 9.

Ground attack. Aviation units have minimal capability to mount a serious defence on the ground. Personnel in aviation units are predominantly aircrew or members of the RAEME with no integral infantry or armoured capability. Aviation units should be sited in depth and be provided with protection; small groups can be deployed to remote areas with frequent relocation to reduce the possibility of contact by ground forces.

Coordination measures

Coordination of the airspace and fire support within the TAOR is crucial. The use of airspace by Army aviation and other users and the potential for rapid movement of aircraft between missions, including transit over different units' TAORs, must be coordinated.

Airspace control and coordination

Airspace control is a service provided in the combat zone to increase operational effectiveness by promoting the safe, efficient and flexible use of airspace. The HQ responsible for the coordination and control of airspace at the tactical level is the joint fires and effects coordination centre (JFECC). The JFECC is the primary fire support coordination agency at the joint force, component and tactical levels in the land environment. The JFECC assists the joint force land component commander in the planning, coordination, execution and assessment of fires in support of land forces. The JFECC will usually be an agency with an appropriate component or formation HQ. The JFECC generally consists of an artillery tactical HQ, a ground-based air defence element and a tactical air control party. An Army aviation element and a naval support party may be included when required.

Planning and the passage of information

Land force commanders are to include airspace considerations in their tactical planning and ensure that requirements are notified to the airspace coordination element or the primary airspace control agency in adequate time. Planning should include the identification of airspace restrictions, and the coordination and control measures needed within their TAOR. The JFECC will inform ground force commanders of aviation operations that may affect their operational battlespace.

Further detail on airspace control and coordination methods are detailed in *ADDP 3.3, Joint Airspace Control*.

Fire support coordination measures

Fire support coordination measures are the fundamental method of integrating aviation and OS plans. A detailed description of fire support coordination measures are in *ADDP 3.1, Joint Fire Support*.

Coalition operational considerations

Army aviation plays an important role in coalition deployments. Early pre-deployment liaison is imperative as nations group, command and support their aviation forces differently. The emphasis may even change within a single nation, depending on the type or phase of an operation. The combination and coordination of Army, Navy, Air Force and other military force aviation will impact on the control and use of the airspace in the AO.[1]

Whether or not Australia is the lead nation in a coalition, there will be a need for preparation and planning. As the military force of the framework nation, the ADF must be prepared to train its personnel and that of the contributing nations and use or modify its existing procedures and practices to integrate the contributing force. As the military force of a troop-contributing nation, the ADF must be prepared to modify its practices, retrain its personnel and even purchase or borrow equipment in order to successfully operate with the framework nation. When the coalition partner is a signatory to the ABCA standardization agreements or a close ally such as NZ, procedural, training and equipment integration will be somewhat easier.

Areas for integration with particular emphasis for Army aviation include:

- C2 (including terminology, architecture and equipment)
- intelligence products and processes
- control measures (airspace and fire support)
- training
- procedural agreement and adoption (eg, airspace, fire support, planning processes and refuelling)
- the interoperability of equipment and organisations
- the commonality of equipment, stores and ammunition
- logistics and maintenance, including resupply processes, nodes and information systems.

1. *ABCA Coalition Operations Handbook, Edition 5*.

Chapter 4

Army aviation in offensive activities

Introduction

The offensive is decisive in war. For Army aviation, bold manoeuvre and shock action are the keys to success. In offensive activities, Army aviation's ability to appear anywhere on the battlefield unexpectedly and to engage targets accurately and at range, makes it an essential member of the combined arms team.

The following are the three offensive actions:

- advance
- attack
- pursuit.

This chapter describes the employment of Army aviation in offensive actions. It details the concept of offensive manoeuvre; the various offensive actions, including the advance, attack, pursuit and raid; and the tactical techniques that support those actions.

Support to offensive tactical actions

Army aviation is capable of conducting or contributing to an offensive action with other members of the combined arms team. Army aviation provides core missions of reconnaissance, armed reconnaissance, attack, escort, air assault, CSS and C2 to various forces (eg, screens, flank security or combined arms teams). In particular, Army aviation can carry out the following:

- contribute to close combat with combined arms or joint teaming
- conduct reconnaissance, armed reconnaissance and attack missions
- engage in raids and air assault
- coordinate and assist other components of OS
- provide support to force-level CSS
- enhance situational awareness
- contribute to deception measures and plans
- contribute to counterattacks or spoiling attacks.

Advance

There are two types of advance, and aviation can assist both to build the tempo on which successful offensive activities depend. These are as follows:

- *Advance to contact.* An advance to contact is conducted when contact with the enemy has been lost or not yet made. The emphasis is on wide reconnaissance to find the enemy positions and strength while the main force remains uncommitted.
- *Advance in contact.* An advance in contact is conducted when contact has been made with the enemy's security forces or main force. The emphasis is on maintaining contact, applying pressure and probing for weaknesses.

Army aviation is a valuable asset for gaining and maintaining contact, maintaining momentum, and providing flank or rear security. An aviation BG may be formed with a mix of manoeuvre forces, such as cavalry and mechanised infantry. This BG would be well suited to commanding one of the security forces (screen or guard) or forming a highly mobile reserve or counterattack force. As aviation assets will always be at a premium in the advance, correct grouping and order of march are critical if the advancing force is to have the balance required to achieve tempo.

Aviation will not be able to provide a continuous full-strength capability that moves continually in the same way as armour or infantry. For every period airborne, an aviation unit will require an equal or greater period undertaking battle procedure. This uncommitted period is required for the helicopters to transit to and from an FOB or FARP, rearm and refuel, debrief on information gained, download mission tapes, undertake mission planning, and enable crews to rest. At any one time, one troop may be supporting the advance while two troops are conducting battle procedure. This is not to say that an entire aviation unit cannot be employed simultaneously. Commanders need to plan for periods when an entire aviation force may be required, and provide advance warning. This will normally require a compromise where limited or no aviation is available immediately, or after a large-scale commitment while the force undertakes preparation or replenishment.

Attack helicopters in the advance

The following are some considerations for employing AHs in the advance:

- *Security forces and advance guards.* The strength of flank guards and rearguards must be consistent with the threat as their provision draws forces from the main body. The use of unmanned aircraft systems or AHs to provide security and early warning is often a measure to conserve effort. AHs are ideally suited for a screen or guard, or for flank security. They have the advantage of being able to cover large areas quickly, have excellent sensors for detecting targets and have the firepower to destroy targets if necessary. Fire support, both direct and indirect, is important to AHs acting as a security force. Advance guards are formed on each axis to clear minor opposition and to ensure the uninterrupted advance of the main body. AHs with lead elements of the advance guard will enhance the advance guard's

firepower to destroy minor opposition. AHs may be employed to reconnoitre the advance route, provide information on enemy forces, clear minor opposition, maintain contact with the enemy or to assist the follow-on forces to destroy pockets of bypassed enemy.

- *Main body.* The main body contains the greater part of the formation's combat strength. Aviation HQ will travel with the main body. Support elements will normally not travel with the main body as they cannot service aircraft when moving. Support elements are likely to be step-up elements which leapfrog from one location to the next to minimise downtime. AHs will not normally travel with the main body as they will be either employed in the security forces or advance guard, or harboured on a short notice to move in readiness to provide support to whichever part of the advancing force needs their capabilities. AHs are flexible enough to be redeployed from one area of the advance to another, if required, to enhance combat power in that area.
- *Rear guards.* Rear guards are employed to protect the rear of advancing forces. AHs will not normally be included in the rearguard but can react at short notice to support action by the rear guard.
- *Reserve.* The reserve for the advance may be an all-aviation force consisting of both TLH/MLH and AH aircraft, or a combined arms teaming of AHs and tanks. Both would provide a commander with a highly mobile and responsive force to respond to unforeseen circumstances or to seize opportunities.

Troop lift helicopters in the advance

Air assault assets such as the TLH assist with the maintenance of momentum by deploying troops and equipment to seize critical points such as bridges or mountain passes. Moving infantry from one axis to another may also be required to maintain momentum or develop combat power on one axis. TLH can also lift guns and reposition them relatively quickly over considerable distances. This will be crucial in areas of operation that have poor road infrastructure and difficult terrain. TLH can also supplement normal resupply assets by transporting critical items to the advance guard or the screen if required. AME is another important role for the TLH, but this requirement will need to be identified early in planning as there are configuration and equipment considerations to be taken into account which will prevent the aircraft from being used in the troop-lift role concurrently.

Command and control

Mission command is paramount for the effective employment of aviation in the advance. Aviation is able to cross multiple boundaries or report lines in a matter of minutes, change axes quickly and move cross-country to engage targets. Aviation commanders at all levels must understand the commander's intent and the role they play in achieving the desired outcomes.

Control measures in the advance must enable control without stifling initiative. Aviation requires room to manoeuvre during the advance. Aviation generally

operates over a relatively wide frontage, making use of any available terrain and vegetation for concealment or protection, and this may require multiple passages across unit boundaries. This requires careful coordination.

Due to the independent nature of the covering force, aviation assets may be allocated under command to the covering force commander. An aviation BG may also be formed and tasked to command and execute tasks for any of the security forces in the advance.

Aviation forces contributing to the advance guards, flank guards and rearguards which are not integrated into combined arms teams should remain under command of the senior aviation commander and provide support from within the main body. Aircraft in the reserve are usually under the command of, or in direct support to, the commander of the reserve.

Combat service support

Lengthening lines of communication will test the force CSS system. The air movement of casualties, reinforcements, combat supplies and high-priority stores improves the efficiency and flexibility of the force CSS system during the advance. CSS missions will be required to support the aviation force with aviation fuel, ammunition and repair parts. Consumption of these essential supplies must be anticipated and stocks should be positioned well forward. Aviation FOBs and FARPs must also be deployed well forward to support aviation forces and aid tactical projection.

Replenishment and casevac of the covering force are particularly difficult tasks. The use of air assets in these roles must be considered, depending on the air and ground-based air defence threat.

Echelon elements are to be well sited to ensure that regular aircraft maintenance can be undertaken in a relatively benign environment. Unserviceable aircraft in the forward area may have to be left for repair by main workshops as the advance continues. Aircraft requiring major repair or depot-level maintenance should be back-loaded to facilities in the support area. CSS elements from aviation units will usually travel with the main body.

Attack

The attack is the essential focus of all offensive activities for the aviation BG. Success in the attack requires physical aggression and concentration of force. Shock action and overwhelming force at the point of contact must be achieved for any assault.

Aviation can attack independently, or as part of an aviation BG or combined arms team. In addition, the ability of aviation to operate during the hours of darkness with little or no degradation in capability should be exploited. Aviation forces cannot seize or hold ground on their own. However, an aviation BG which includes mechanised infantry and armour and can seize and hold ground.

Aircraft are vulnerable to heavy ground fire. An air assault directly onto well-defended objectives is unlikely to succeed without the support of overwhelming firepower to suppress the enemy's defences. Air assault forces may be tasked to secure the assembly areas, forming-up places or fire support locations in preparation for the attack.

Attack helicopters in the attack

AHs in the attack may undertake one or more of the following roles:

- armed reconnaissance
- ABF
- SBF
- reserve
- flank security.

Armed reconnaissance. AHs may be tasked to locate the enemy's principal weapon systems, strong points, obstacles, reserves, fire support assets, HQ or C2 installations, and gaps in their defence. As aircraft movement is restricted when under fire, the ability to conduct close reconnaissance is limited.

Attack by fire. An ABF is direct fire employed to destroy the enemy from a distance, and is normally used when the mission does not dictate or support the occupation of the objective. An ABF is not executed in conjunction with a manoeuvring force. When assigning this task, the commander must specify whether the intent of fire is to destroy, fix or suppress.

Support by fire. An SBF role is frequently allocated to AHs in the attack and differs from an ABF in that it supports an assaulting force. The AH providing the SBF may provide suppressing fire, destroy point targets, coordinate OS (including OAS) or simply overwatch in a 'be prepared' role for subsequent action. The SBF force does not participate in the actual assault.

Reserve. AHs can contribute to a highly mobile reserve, capable of reacting at short notice almost anywhere on the battlefield. This is particularly important when information on the enemy is lacking, or when the enemy is known to have a large reserve and the potential deployment routes for that reserve are too numerous to defend simultaneously. A reserve with both AHs and air assault assets also offers sufficient mobility and firepower to provide a cut-off capability should the opportunity present itself.

Flank security. At times when maximum combat power is required but manoeuvre forces are limited, a relatively small force of AHs can provide flank security over a relatively large area. In addition to screening the attacking force, the AH is also able destroy or neutralise threats.

Attack considerations. AH attack missions are often most effective when employed against the flank or rear of enemy formations. AH attack missions may

involve close air support and artillery to form a joint air attack team (JAAT). The following are the two types of attack mission:

- *Quick attack.* The objectives of the AH quick attack are to overwhelm the enemy quickly and to seize the initiative using speed and firepower. A quick attack is conducted with the immediately available resources to maintain the momentum or to exploit a situation. A quick attack occurs when disruption, attrition or destruction is desired and the AH force is not already in the attacking phase of a deliberate attack. This can occur at any time, for example, as a result of sighting the enemy while on a fighting patrol, or after conducting battle drills and posturing as a result of being contacted in flight.
- *Deliberate attack.* Army aviation deliberate attack missions are characterised by the pre-planned and coordinated employment of firepower and manoeuvre against the enemy. Due to the AH's vulnerability to accurate ground fire, commanders must plan to use maximum stand-off ranges and operate in the hours of darkness when engaging well-established enemy defensive positions. Additionally, security considerations for the flight routes and fire position must be pre-planned. During a deliberate attack, the AH will usually employ PGMs against armoured vehicles and infrastructure for accuracy and firepower. Remote designation with PGMs is the preferred method of engagement, as it maximises aircraft survivability.

Lift assets in the attack

TLH/MLH in the attack may undertake one or more of the following roles:

- air assault
- reserve
- deception.

Air assault. Air assault forces may be used for reconnaissance, cut-off, flank security and assault.

Reserve. An air assault force in the reserve is useful if it enables the ground forces to be in location more rapidly than by ground movement. Consideration needs to be given to the security of the LZ and the level of risk the AMFC is willing to accept.

Deception. Aviation can be employed to deceive the enemy in several ways. If air assault missions are conducted to a location with no intent of dropping troops, the enemy may be deceived into orientating themselves in the direction of the anticipated air assault landings. Similarly, the enemy can be deceived in relation to the size of an air assault force by conducting more lifts than are necessary. These actions serve to divert the focus of the enemy away from the real assault forces.

Command and control

Aviation assets employed to conduct an attack should be under the command of the senior aviation commander working with the force commander or the assault

force commander to enhance flexibility and efficiency. As aircraft can cover ground quickly they may be able to support a number of tasks sequentially by regrouping or re-tasking during the action, thus adding to the simultaneity of the attacking force.

Combat service support

The major aviation CSS consideration to support an attack is the provision of FARP facilities in the forward area. Ideally, FARPs should be established to refuel and rearm complete aviation tactical units simultaneously in order to minimise the time for which aircraft are removed from the battle. FARPs should be established close enough to the objective to reduce aircraft travel time but far enough away to provide security from enemy observation and indirect fire. Wherever possible, a reserve FARP should be established to ensure the continuity of aviation missions.

Air movement missions can rapidly concentrate forces and supplies for the attack, and transport subordinate commanders for briefings and orders. The air movement of artillery and ammunition may allow H-hour to be advanced and provide more fire support than would otherwise be possible.

Pursuit

Tactical grouping for the pursuit is very similar to the advance to contact, but differs in the assessment of the enemy's and posture. The pursuit follows the defeat of an enemy whose degree of cohesive resistance has been considerably reduced. The BG commander in a pursuit will need to take considerable risks in order to maintain momentum. It will be important to maintain pressure on the withdrawing enemy forces, forcing them off balance and not allowing any opportunities for them to regain the initiative.

In the conduct of the pursuit, different FEs may be allocated the tasks of pursuing the enemy, cutting off enemy withdrawal or following up the pursuing force. An aviation BG may be best placed to conduct the pursuit. Alternatively, the integration of aviation forces within an appropriately balanced combined arms team will be able to inflict destruction on enemy forces or maintain contact with the enemy. It may be necessary to regroup aviation assets as the pursuit develops, to exploit opportunities or to sustain the tempo of aviation activities.

Attack helicopters in the pursuit

AHs will be required in direct pursuit to drive in the enemy's rearguards, generate fear and maintain the momentum. The ability of AHs to fight and move concurrently makes them uniquely suited for this task.

The AH will play a key role in maintaining contact with the enemy and assisting the pursuit force to quickly overcome or bypass the centre of resistance. In the attack role, AHs can be employed at decisive points independently or as part of a JAAT to destroy an encircled or retreating enemy.

Lift assets in the pursuit

In the pursuit, air assault assets will exploit success and assist with the maintenance of momentum. They may contribute to tactical actions such as coup de main or cut-off, and retain the secondary role of resupply and casevac.

The threat of an air assault may keep the enemy off balance and, in conjunction with rapid manoeuvre by the main force, ensure that the enemy does not regain the initiative. Airborne forces have an agility advantage, but care must be taken in selecting their mission due to the limitations of the forces they carry. Air assault cut-off forces may not have sufficient combat power to completely block a main enemy withdrawal route. AHs may be allocated to the ground component of the air assault force to boost their combat power or to eliminate a key element of the enemy's force, such as armour or vehicles. This entails a high level of risk, as the AHs now have to contend with threats from multiple directions. Where air assault forces are not strong enough to undertake a complete cut-off, they may be used to harass and delay the enemy in a series of limited objective actions.

Command and control

As lines of communication extend, aviation assets may need to be allocated under the tactical command or operational control of other manoeuvre forces, rather than being retained under centralised control. However, aviation forces within each element should be concentrated under the senior aviation commander to ensure that aviation missions are coordinated and responsive to the force commander.

Combat service support

CSS for aviation in the pursuit is similar to the advance. However, the likely method of operation of the pursuing and cut-off forces may require allocating additional logistic support units, particularly fuel tankers, to the aviation force. FARPs will be essential to the sustainment of momentum.

The location of depth objectives is influenced by the logistic systems' capability to respond to greater demands for the supply of fuel and ammunition. The repair and recovery, replacement, and reinforcement procedures are similar to the advance procedures. Extended lines of communication, a reduced speed of operation and likely poor communications often exacerbate difficulties with CSS procedures in the pursuit.

Tactical techniques

Offensive tactical techniques used by aviation include:

- airborne
- ambush
- amphibious
- ABF

- cordon
- corridor thrust
- coup de main
- diversionary attack
- raid
- reconnaissance in force
- search
- SBF
- sweep.

Airborne

The following are the common types of airborne tactical deployment:

- paratrooping
- air assault
- airland
- airdrop
- SO deployment.

These techniques may be employed to lodge a force, manoeuvre within the battlespace to gain advantage, assault an objective, or administratively move troops and materiel. Airborne insertions are usually a precursor to follow-on land forces.

Airborne techniques may involve a range of fixed-wing and RW aircraft, some of which may land to deplane troops. The planning process and many of the considerations for the different types of airborne techniques are similar, except the success of an air assault is dependent on a combined arms team incorporating AAvn, assault forces, OS, intelligence, surveillance and reconnaissance and electronic warfare.

Considerations. The following points should be considered when planning air assault activities:

- the role of the TLH/MLH
- the role of the AH
- intelligence, surveillance and reconnaissance and electronic warfare
- the role of fire support
- the planning process.

Role of lift aircraft. Lift aircraft manoeuvre forces and equipment. This may include, but is not limited to, the assaulting force, supporting forces and equipment, resupply, AME and deception.

Role of the attack helicopter. The AH can be employed for the following purposes:

- to gather information on the landing area and the target area
- to conduct route reconnaissance to identify the most appropriate routes, downed aircrew pick-up points and LZs (primary, secondary and alternate)
- to escort the air assault to provide security and suppress enemy fire during transit
- to provide intimate direct fire support to infantry during the dismount and/or assault
- to coordinate OS in support of the assault force
- to provide flank security.

Intelligence, surveillance and reconnaissance and electronic warfare. Effective intelligence, surveillance and reconnaissance and electronic warfare plans are essential for route and LZ/PZ selection. Ineffective intelligence, surveillance and reconnaissance will increase risk to the mission.

Role of fire support. The JFT is essential to planning and may be used for intelligence, surveillance, target acquisition and reconnaissance during staging. fire support may also be employed in suppression of enemy air defences, counter-battery fire and close fire support to ground forces.

Planning process. Airborne activities use a reverse planning process, working backwards from the ground tactical phase through the lodgement and launching stages, which is essential for the establishment of a framework for the joint MAP. Aviation planning staff undertake liaison at an early stage with the airborne forces commander or the JTF HQ controlling the activity.

Ambush

An ambush is a surprise attack from a concealed position by a force lying in wait. It is usually a brief encounter and does not require the seizure or holding of terrain. It is a technique combining surprise and shock action to the fullest extent in order to destroy an enemy and to obtain intelligence through the capture of enemy prisoners, information and material. It is particularly useful in causing severe physical and psychological shock to an enemy force and, if used frequently enough, will cause moral dislocation of the enemy forces, restricting their movement. Although discussed here as offensive action, an ambush can also be conducted as part of defensive activities.

Army aviation’s ability to concentrate fire is well suited to ambush. The usual technique for aviation participation in an ambush is by the insertion of infantry or the conduct of an ABF. The aircraft fire line and fire positions will need to be

pre-planned and reconnoitred, but aircraft will not remain on station for extended periods waiting for a target. Their speed and agility enables them to hold in a harbour area until activated and then rapidly occupy their fire positions. Cavalry or a dismounted patrol might act as a trigger, calling the aircraft into their pre-prepared fire positions at the appropriate time.

Amphibious

The amphibious tactical techniques are as follows:

- amphibious assault
- amphibious raid
- amphibious demonstration
- amphibious withdrawal.

The amphibious assault, as a part of amphibious actions, is a military mission launched from the sea by naval and landing forces embarked on ships or craft. It consists of the amphibious TF and has the principal task of landing forces ashore tactically into an environment ranging from permissive to hostile, in order to accomplish the assigned mission. It is important to note that its purpose is not to secure a beachhead; rather it is for tactical objectives, which may include seizing and securing a point of entry for follow-on forces, but may also be the defeat of the threat itself. Amphibious insertions are not limited to periods of conflict and may be employed across the spectrum of conflict.

The landing/assault force invariably consists of ground forces, Army aviation and combat support. They will be task-organised to conduct the assault and may be functionally organised for specific tasks. The Army aviation contribution to amphibious assault includes:

- *Preparatory phase.* AHs will contribute through their normal information gathering. TLH will contribute through the insertion of small groups to act as guides during the landing or through the insertion of SF for clandestine activities. Coups de main may be employed to secure key infrastructure before the lodgement. Aviation commanders will contribute to the planning process.
- *Beach and coastal information and reconnaissance.* Aviation reconnaissance may provide beach and coastal reconnaissance information and early warning of enemy activities, and undertake tasking to destroy defences.
- *Lodgement phase.* Naval vessels will normally be held well offshore to reduce the chances of detection and interdiction. While this distance provides an element of security, it results in a protracted lodgement period as small craft ferry forces ashore. Lift aircraft, escorted by AHs, can be employed to rapidly build up forces onshore.
- *Support to the assault force.* When an amphibious assault is used, AHs may be employed to provide direct fire support to the assault force and to

coordinate OS. The distance to shore and the weapon load carried will impact the time for which the aircraft can remain on station.

- *Planning process.* The amphibious TF planning process employs a reverse planning approach to determine the time available for the operation. This is essential for the establishment of a framework for the commencement of the joint MAP. This mirrors the air assault planning technique, and aviation will contribute to joint planning.

Considerations. The following points should be considered when planning the employment of aviation in maritime activities:

- the maritime environment
- storage and deck space
- time limitations
- force build-up
- sea states.

Maritime environment. The maritime environment is highly corrosive. Navy aircraft are 'marinised' to limit the damage from corrosion. However, this is a costly process that adds to the weight of the aircraft and reduces the useful load. Army aircraft have some resistance to corrosion due to the nature of their construction, but they are not marinised. As a result all aircraft should be stored below-deck or in a hangar during transit, and will be subject to additional maintenance and preventative procedures both while embarked and at the conclusion of the deployment by sea.

Storage and deck space. Room for storing aircraft is limited on Australian ships. As a result, aircraft have their blades folded in order to accommodate more aircraft in any hangar or flight deck, and RW aircraft require space in which to run up. The deck space on most Australian ships is also limited and will not allow the full complement of helicopters to start simultaneously once their blades are unfolded. Thus the aircraft on the deck will have to start and take off before subsequent aircraft can be moved to the flight deck, have their blades unfolded and start their engines. The introduction of the amphibious assault ship, multi-purpose improves the ability to manage deck space; however a CT-sized lift will still require detailed deck cycle management.

Time limitations and force build-up. The time to unfold blades and ensure that the aircraft is mechanically sound is a lengthy process even in the best of conditions. When aircraft are readied for flight at night and/or in heavy sea states this process takes longer. The time taken to launch multiple waves of aircraft can be considerable.

Sea states. Aircraft are limited in the amount of pitch and roll in which they are controllable. Ships pitch and roll, and the deck angles may be out of limits for the launch and recovery of aircraft. To enable the launch and recovery of aircraft, the ship firstly has to find an area in which the sea state is conducive, and will then

need to steam into the wind to provide the optimum conditions for the aircraft. If the seas are too heavy, aircraft will not be able to operate.

Attack by fire

Army aviation may be required to neutralise or destroy a threat force from a suitable distance. A commander has the opportunity to destroy it through the employment of the ABF technique. The purpose of the ABF is to employ direct fires to destroy a threat from a distance; normally used when the mission does not dictate, or support, the occupation of the objective. It can have the aim of destroying, suppressing, fixing or deceiving a threat.

ABF is an AH task, as it requires longer range weapons. Ground forces may conduct the ABF with AH support. The CT or BG commander will need to provide flank and rear security to those elements providing the direct fire.

Cordon

During any action, a threat within any environment may need to be contained to allow the main body to bypass enemy positions or to undertake a containment or search of a specific area. When such an action is required, the defender should be isolated from outside help and dominated. The cordon provides one technique to achieve this physical and moral dislocation or disruption of the threat. The force conducting the cordon may be mechanised or light, depending on the threat, the speed and the security required.

The cordon force is a combined arms grouping. The key groupings are as follows:

- *Inner cordon.* An inner cordon, if required, contains targeted suspects and prevents outward movement. Its composition is determined by the nature of the threat, but it will usually comprise dismounted or mechanised infantry.
- *Outer cordon.* An outer cordon prevents inward movement and normally consists of movement control measures such as the deployment of vehicle checkpoints (VCPs), patrols, checkpoints and observation posts. The outer cordon does not have to be a continuous ring of troops; the nature of the terrain and the threat determine its layout. Aviation can contribute to the outer cordon. AH patrols can cover the gaps in the outer ring and provide both the early warning and the response capability if the enemy or adversary attempts to break in or out of the cordon.
- *Traffic control posts.* Traffic control points should be joint teams with local police/law enforcement bodies. AHs can be on call to support traffic control points should they require additional firepower.
- *Reserve(s).* The reserve when deployed as an air assault force can rapidly cover vast distances. Shorter distances however may be more expediantly covered by a ground manoeuvre.
- *Flank security.* Flank security is formed on an ‘as required’ basis but is another task that is well suited to the AH.

Corridor thrust

A corridor thrust is an advance on a narrow frontage. This may be because there are buildings, mountains or other key terrain to either side of the corridor that must be captured and defended to provide security to the axis. So the force advances along a corridor, clearing in detail, securing and defending the axis to provide a cleared corridor. Concurrently, security forces manoeuvre on the flanks to disrupt the enemy's scheme of manoeuvre and exploit opportunities. The use of this technique accepts high risk to the security of the lines of communication. It can be considered as a repetitive sequence of an obstacle crossing drill, close assault and hasty defence.

Groupings. A wider offensive action employs a covering force to shape and know the battlespace. Two main forces, the thrust force and the security and support force, conduct any corridor thrust as follows:

- *Thrust force.* The thrust force consists of:
    - the enabling force
    - the overwatch force – AHs would be well suited to contributing to the overwatch force, possibly operating to the flanks
    - the assault force.
- *Security and support force.* This force is tasked to secure cleared ground and ensure CSS to the thrust force. It may also be tasked to secure the initial lodgement. Lift assets are likely to contribute to the corridor reserve by carrying a reserve force.

Coup de main

A coup de main is designed to seize an objective of such significance that its loss to the enemy may well win the current battle. It relies on speed, shock and surprise for its overall impact. As with raids, coups de main entail significant risk and require well-prepared and well-trained forces, as those forces habitually may be committed to an isolated location (eg, a bridge or road crossing in depth) and risk destruction if not quickly reinforced.

A coup de main is carried out using special insertion methods, such as airborne, to enable surprise and speed. Coups de main may be carried out by SF supported by conventional forces. The initial forces may not have the balanced combat power required to hold or seize the objective, and may require immediate fire support followed by the timely insertion of the required firepower at a later point.

Army aviation enables coup de main principally through air assault and AH forces. Specifically, it can insert the initial forces as well as flying in follow-on forces to achieve a rapid build-up. The AH is also able to contribute to the firepower required by the force. The air movement of materials, stores and support weapons during the operation may ensure the viability of the assault force on the objective. The assault force is also likely to require the evacuation of casualties, which can be conducted by Army aviation.

Diversionary attack

A diversionary attack involves a show of force whereby a force attacks or threatens to attack a target or objective other than the main target or objective for the purpose of drawing threat defences away from the main target. The diversion may take the form of a feint or a demonstration.

A demonstration is an attack or show of force without contacting the threat, and usually forms a part of an overall deception plan. A demonstration is planned at the highest level in concert with other battlespace deception measures to mislead threats into believing that a force is larger than it actually is and/or to mislead the threat into reassigning forces elsewhere to deal with a suspected friendly force main effort. A feint is an offensive technique involving actual contact with the threat. These diversionary attacks are designed to simulate the main attack.

Aviation can conduct diversionary attacks as either an ABF or through the insertion of an air assault force. The show of force must be large enough to simulate the main effort but not so large as to weaken the real main effort. The use of aviation in the diversion can add to the realism and coincidentally achieve attrition of the enemy force.

Raid

A raid is an attack, usually small in scale, involving swift penetration of hostile territory to secure information, equipment or people; to shape the battlespace; and/or to destroy an objective without any intention of holding ground. A raid ends with a planned withdrawal upon completion of assigned tasks. Raids are normally conducted by SF but may be conducted by conventional forces over short distances and in favourable conditions.

Army aviation can contribute to raids with insertion and the extraction of forces by TLH and/or MLH. AHs will be employed to escort the air assault and may be used as a precision fire support asset for the raid force. Army aviation may also contribute to raids through the conduct of JAAT if destruction of the target is required. An aviation BG or task-grouped aviation CTs may be employed to raid an objective for short periods, to seize key points and materials, or to destroy key enemy capabilities such as C2 nodes or reserves. Some circumstances will prevent the use of aircraft, and in these instances raid forces must have contingency plans for using other means for the insertion and withdrawal.

Reconnaissance in force

Reconnaissance in force is linked to the advance and the raid in that it is a tactical technique designed to discover and/or test the threat's strength, or to obtain other information. BG-sized combined arms teams or larger usually conduct a reconnaissance in force with the clear intent to gain information and fight for it when required. A combined arms team of sufficient fighting power can conduct this technique in complex terrain where the threat is likely to ambush smaller reconnaissance forces, such as patrols. A reconnaissance in force is an aggressive reconnaissance conducted as an offensive tactical action or task, with clearly stated reconnaissance objectives.

The less that is known about the threat, the stronger the force conducting the reconnaissance in force must be. Because of the lack of threat information, a commander normally conducts a reconnaissance in force as an advance to contact, or as a series of attacks across a broad frontage. Armoured and mechanised combined arms teams together with AHs are ideal for this purpose. AHs may either support the ground units conducting the reconnaissance in force or operate independently by conducting armed reconnaissance.

Search

The purpose of a search is to systematically scan and search areas, persons or objects of interest to locate, identify and, where necessary, retain information or any objects of interest. Search techniques can vary considerably depending on the type and aim of the search required. Such techniques are therefore broad in scope, but are generally based on two levels. The first level involves an area search of any type of terrain by dismounted and mounted patrols, and by air assault forces as a part of their reconnaissance and surveillance tasks.

The second and lowest level of search is undertaken by patrols. Light infantry are best suited for patrol searches, and the size of the force will be tailored to suit the task and the threat. Possible tasks for a patrol search include:

- personnel searches (eg, detainees, POWs and other persons of interest)
- vehicle searches, particularly at VCPs and roadblocks
- route and vulnerable point checks and searches
- searches of specific installations and key points (which may also include aspects of those described previously, including the search and sweeps for weapons).

Support by fire

The purpose of an SBF is to increase the supported force's freedom of manoeuvre by placing direct fires on an objective that is to be assaulted or breached by a friendly force. SBF may be employed to fix or suppress. SBF positions are located within the maximum friendly direct fire range of the threat positions. The commander selects them so that the moving assault force does not mask its supporting fire. For this reason, SBF positions are normally located on the flank of the assault force and elevated above the objective if possible.

SBF is generally provided by AHs in troop to squadron strength. A squadron is required to maintain one troop continuously on station. At any time one troop will be firing, one troop will be transiting to or from the FARP, and the third troop will be refuelling, rearming, reporting and replanning. The SBF force may have to fight through some opposition to gain the most advantageous position to support the main effort. The forces best suited to an SBF are armour and aviation.

Sweep

Following a successful attack, large areas may need to be cleared. This will necessitate a sweep. The purpose of a sweep is to advance on a broad front,

systematically clearing any residual threats, usually inferior in strength and capability, and likely to be demoralised. A sweep can be employed in all terrain to clear specific small areas or larger areas.

The forces used in a sweep can be mechanised or light depending on the terrain, threat and the requirements for speed. AHs can conduct a sweep in the same way as an area reconnaissance. The risk of ambush is high in this situation. Security is normally achieved by aviation and armour working in cooperation, each clearing the next bound for the other.

Chapter 5

Army aviation in defensive activities

Introduction

Defensive activities are designed to prevent, resist or destroy enemy attacks. They include:

- defensive battles
- blocking actions
- counterattacks.

Defensive activities are seldom decisive. Every opportunity must be taken to use Army aviation's unique characteristics. Any and all of the types of actions described in this chapter can and should be conducted during defensive activities.

During the defence, Army aviation must be permitted to fully exploit its firepower, mobility and potential for shock action. The major roles for aviation in defensive activities are as security forces, in direct fire support, in ready reaction tasks, and in raids or attacks against the enemy's rear area. Ready reaction tasks, including counterpenetration and reserve tasks, require careful planning, rehearsal and coordination to enable rapid response and the maximum effectiveness of firepower. Security forces and their groupings are described in Chapter 7.

This chapter describes the employment of Army aviation in defensive activities, including area defence, mobile defence, delay and withdrawal.

Support to defensive tactical actions

Military activities undertaken when the initiative lies with the enemy are essentially defensive in nature. Defensive activities range from those designed to retain terrain with the intention of engaging in battle under favourable circumstances, to those that provide a safe environment for civilian populations receiving humanitarian assistance. Land force defensive activities consist of two types of tactical actions as follows:

- *Defence.* Defensive actions are:
    - area defence
    - mobile defence.

- *Retrograde.* Retrograde actions are:
  - delay
  - withdrawal.

Area defence

Area defence involves the planned occupation of ground of the commander's choosing. Generally, there are two specific aims. The first is to draw or channel the enemy into selected engagement areas (EAs) in order to destroy them by firepower, and the second is to resume offensive activities as soon as possible. Army aviation can be deployed in area defence as part of a larger formation with the main tasks of destroying the enemy and defending within boundaries. Other tasks might include contributing to the security forces, counterattack and counterpenetration.

Attack helicopters in area defence

The precision firepower that can be generated by the AH and its ability to control OS will greatly enhance the lethality and effectiveness of both the covering force and the main defensive position. AHs also have the capacity to deny the enemy information by conducting armed reconnaissance missions as a part of a security force.

AHs have many tasks in area defence. They are best suited to the tasks that enable them to use their direct fire weapons at maximum range and in manoeuvre. Manoeuvre tasks include participating in the guard or screen, and counterpenetration and counterattack tasks. It is likely that the AH will 'step back' through the various roles, starting with the covering force battle.

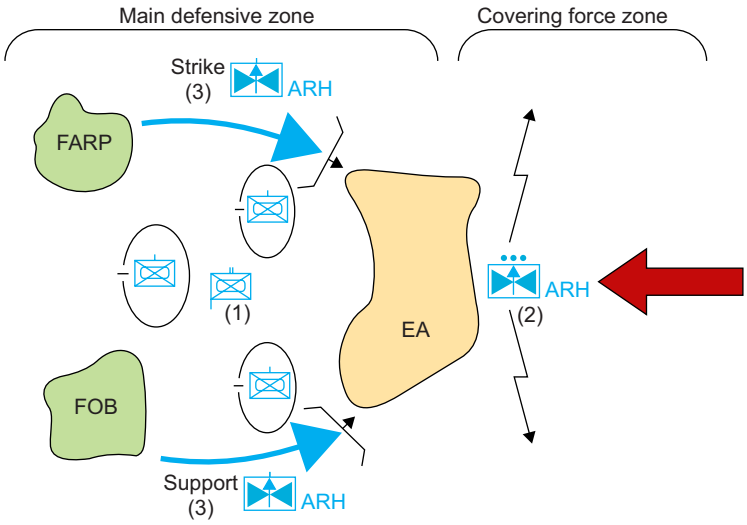
The covering force battle aims to slow the enemy, reduce fighting power and shape the subsequent battle. It will bear a strong resemblance to a mobile defence. Once the covering force withdraws into the main position, the main defensive battle commences. AHs can assist the covering force to break clean from enemy contact and continue to provide reconnaissance support in conjunction with the screening force.

During the main defensive battle AHs can occupy fire lines or battle positions around the main defensive position while they engage the enemy at range. Alternatively, they are able to conduct spoiling attacks or counterattacks independently or in conjunction with other forces. The ability of Army aviation to engage targets throughout the enemy's depth allows the defender to retain an element of the initiative and to keep the enemy off balance.

AHs are also suited to counterpenetration and counterattack tasks. However, AHs used in the covering force battle and the main defensive battle will not have had the opportunity to prepare for the counterpenetration and counterattack tasks, and may not be replenished and prepared for this role. If AHs are required in both the

covering force battle and the reserve, they may need to miss the main defensive battle. Otherwise, additional AHs will be required.

When occupying a fire line in an area defence, each aircraft requires primary, secondary and alternate fire positions at each battle position, and room to manoeuvre between those fire positions. Accordingly, AH commanders at all levels must be involved in the initial defensive plan and have time to prepare these positions. An example of AHs in area defence is shown at Figure 5–1.



Note:

1. Mechanised infantry BG defending in area defence.
2. Aviation troop screen/guard forward and to the flanks.
3. Aviation CTs providing a supporting line to the main defensive position or to strike in-depth targets.

Figure 5–1: Example of aviation forces supporting an area defence

Lift elements in area defence

The employment of air assault tactical actions will contribute to the generation of firepower in support of the covering force during any mobile battle. Small groups featuring man-portable anti-armour weapons, such as the Javelin, can be inserted and extracted via air assault missions. Support may also comprise some elements of logistic support to the covering force. The movement of reserve forces to counter enemy penetrations may also be achieved with an air assault; however, dismounted forces lack the combat power and protected mobility required by a reserve.

Mobile defence

Mobile defence is based on battlefield mobility, which allows a commander to concentrate fighting power quickly. The mobile defensive battle is essentially an armoured and aviation battle, supported by mechanised infantry, and is conducted at formation level only. It requires well-trained forces with mobility, firepower, communications and a flexible command structure capable of sustaining high-tempo activity. The force must react quickly to fleeting opportunities and be able to avoid becoming decisively engaged.

Mobile defence requires a high degree of battlespace mobility to achieve its mission and utilises all available resources to generate this mobility. It is particularly suited to forces operating over wide areas to enable them to concentrate combat power quickly.

Deployment groups

Given adequate resources, the commander's force should be divided into the following four groups:

- the covering force
- the blocking force
- the attacking force
- the reserve.

Covering force. The task of the covering force is to maintain contact with the enemy lead elements and the enemy main body, and to report its movement and delay its arrival into the EA until the blocking and attacking forces are prepared.

Blocking force. The aim of the blocking force is to stop or deflect the enemy and force it to close up into the EA.

Attacking force. The attacking force is the essence of mobile defence which distinguishes it from other forms of defensive manoeuvre. It contains the bulk of the manoeuvre forces and relies on tanks and combat aviation to complete the destruction of the enemy. The timing and location of its commitment are critical to the outcome of the mobile defence battle. It is not tasked with the recapture of lost ground unless this is necessary to ensure the destruction of the enemy.

Reserve. The commander should establish discrete reserves for each stage of the mobile defence. These may be uncommitted elements from the covering or attacking forces. The fluid nature of mobile defence against a strong enemy necessitates a tank-heavy reserve force.

Mobile defence stages. The mobile defence battle is fought in the following three stages:

- a covering force battle
- a blocking and holding battle

- an attack.

Attack helicopters in mobile defence

AHs are ideally suited to mobile defence. Their ability to engage at significant range with PGM, provide suppressive fire with rockets and guns, and then break clean to manoeuvre to the next EA is unparalleled. Armed reconnaissance and attack missions conducted during mobile defence contribute to shaping the battlespace and destroying the enemy. The use of AHs must be planned early, as they may be required within each of the mobile defence deployment groups.

AHs may be used in guard or sniping roles, and to develop fallback positions to collocate with the armoured and mechanised infantry in the holding force location. If time permits, AHs allocated to the holding force must prepare battle positions and rehearse counterpenetration and counterattack plans in the same manner as described for the area defence.

The ability of Army aviation to engage targets throughout the enemy's depth allows the defender to exploit the concept of fluid offence and/or defence. AHs may participate in spoiling or counterattacks to dislocate or disrupt, or they may contribute to the destruction of enemy forces as part of an ambush. The movement of reserve forces may also be achieved with a reserve air assault force.

Where an opportunity presents itself, AHs may also be employed to destroy or disrupt the following:

- enemy second echelon forces or administrative areas
- enemy reserves
- attacking C2 and CSS assets.

Lift assets in mobile defence

Lift assets can provide valuable support to the blocking and attacking forces. The use of TLH/MLH for combat support and CSS missions can contribute to the preparation and mobility of sequential blocking positions, as well as moving covering forces or OS.

Delay

The purpose of delay operations is to trade space for time and to slow the enemy's momentum while inflicting maximum casualties. Delay may be ordered as part of any offensive or defensive phase in order to protect a force or allow it time to achieve its task. Covering forces and guard forces may also employ delay tactics. Delaying forces avoid decisive commitment unless otherwise ordered. Delay actions may comprise a number of tactical actions, including:

- attack
- defence

- delay on alternate or successive positions
- ambushes
- raids.

Many of the considerations and roles for the AH in the delay are similar to those for attack and mobile defence. Army aviation can contribute to delay operations independently or as part of a balanced combined arms team. It can gain information, provide early warning, and provide forces to attack as part of a blocking action, attack, raid or ambush. The AH's agility, firepower and speed of execution enable it to stand off and deliver sufficient fire to enable ground forces to achieve a clean break. Additionally, air assault forces are able to move to new blocking positions to assist with the delay efforts. Army aviation forces are also able to contribute to the overall situational awareness of the delaying force commander through AH reconnaissance operations.

Withdrawal

The purpose of a withdrawal is to break clear of the enemy and redeploy to a new position or task with a minimum of interference and casualties. The success of a withdrawal in contact is largely dependent on the mobility and firepower of the remaining assets to conduct denial and rearguard actions. Army aviation, and AH operations in particular, is inherently suitable for this type of fire and movement. The AH's firepower and speed will assist in minimising enemy interference while preserving fighting power. The combat power of forces withdrawing can be significantly enhanced by the addition of Army aviation capabilities. Army aviation can be integrated into a combined arms team for this task or formed as an aviation BG to command a delay force.

Army aviation can contribute to the withdrawal of forces by assisting the break clean, attacking pursuing enemy forces, and by providing flank and rear security. This can be achieved by the following means:

- maintaining contact with enemy forces to ascertain their movement and intent
- conducting air assault missions to move troops, equipment and stores to intermediate and new defensive locations
- attacking follow-up forces
- escorting those forces withdrawing
- conducting AME.

Careful consideration for the location of FARPs and FOBs during withdrawal must be given as it is possible for combat forces to retrograde faster than the supporting CSS.

Tactical techniques

Tactical techniques include:

- battle handover
- break-out from encirclement
- convoy escort
- counterattack
- counterpenetration
- defend a battle position
- defend a strongpoint
- defend-in-sector
- reserved demolition
- route security
- spoiling attack.

Battle handover

The purpose of the battle handover is to ensure a smooth handover of responsibility to another force, either passing to the rear on completion of its task or to meet a replacement force at the battle handover line. As such, the battle handover is considered a control measure.

Break-out from encirclement

A force is considered to be encircled when it has lost its freedom to manoeuvre and all ground lines of communication are cut by threat actions. Encirclement may restrict the freedom of action not only of the commander of the encircled force but also of the higher commander. Once encircled, a force must conduct both offensive and defensive tasks to survive and a successful break-out requires a very rapid transition between them to succeed.

A helicopter force is unlikely to be encircled unless it is trapped in a FARP. To be trapped in a FARP means that insufficient protection has been provided to the FARP and there is little likelihood of recovering the situation. In any other situation that is likely to develop into encirclement, the crews will simply start the aircraft and use the low-level, high-speed dash capability of the aircraft to fly through the cordon. The CSS elements left behind will not have the same flexibility and will also lack the firepower with which to fight their way out.

Deployment considerations. Breaking out will not be an option for a helicopter force. The only option is to conduct a breakthrough and link-up with the encircled force. The success of such a link-up will depend on the attacking force (with aviation as part of a combined arms team) swiftly attacking the enemy before it can take advantage of the situation and fully close the trap.

Convoy escort

Road convoys require protection in tactical situations. The purpose of a convoy escort is to act as a security force which is task-organised to provide support to a convoy. It is likely to be a combined arms team and include forces such as cavalry, tanks, mechanised infantry and aviation. High-priority moves will most certainly warrant the use of AHs and lift assets to provide early warning and enhance firepower and quick reaction forces.

The AH is ideally suited for convoy escort. A troop of AHs would act as an advance patrol to clear the route in front of the convoy. Another troop of AHs would move with the convoy to act as flank security and as close protection for the vehicles. This close protection escort would also be able to react to immediate threats to the convoy. A lift troop would provide the reserve and a counterattack force. Its composition is based around the nature of the threat but is likely to be based on a light infantry force mounted in TLHs. Flank security may be provided by the escorting AH, depending on the terrain and the threat.

Counterattack

At any time during the conduct of a defensive battle, enemy forces are likely to gain a foothold within the defensive perimeter, requiring them to be dislodged by a counterattack. Alternatively, when friendly forces have completed an attack on an objective and are reorganising, they are vulnerable to a counterattack by the apparently defeated enemy. The purpose of the counterattack is to regain lost terrain or to disrupt an attack.

Counterattacks can be pre-planned and deliberate, but often they will be quick attacks to stabilise the situation. The grouping and size of the counterattack force will depend on the terrain, the vegetation and the threat being countered. If possible, it should be carried out by a combined arms team. Aviation can contribute to the counterattack with AHs providing direct firepower and TLHs/MLHs moving dismounted infantry to areas where they are required.

A counterattack task can be allocated to the reserve, or be a discrete force apart from the reserve. In a BG-defended area, a local counterattack force of platoon or troop size (sufficiently reinforced by armour, AHs and OS) is generally sufficient. In a formation-defended area, the counterattack force is likely to be a CT which includes mechanised infantry and armour, reinforced with AHs and OS.

Counterpenetration

During the defensive battle, the enemy can penetrate the defended area and threaten the integrity of the defence. The purpose of counterpenetration is to block the attacking force that has achieved the penetration, stabilise the situation, and, if possible, regain the position. Counterpenetration positions can be pre-prepared in vulnerable areas or the counterpenetration can be undertaken as an ‘as required’ task where no pre-planned positions exist.

Dismounted infantry and cavalry forces are ideally suited to the task. Anti-armour weapons and AHs are ideal in the direct fire role as an ABF force.

Defend a battle position

Battle positions are defended locations from which fire can be applied into an EA. The defence of a battle position is more important for the achievement of fire domination in an EA than the retention of the terrain itself. Combined arms teams may be allocated individual battle positions or be integrated into a single battle position.

Forces occupying battle positions conduct their defence as for an area defence, but usually in a greatly reduced area of terrain, using small teams. Each defensive battle is conducted differently, with decisive events largely dependent upon the mission, the enemy and the terrain. Unless the battle position is large, possibly at TF level, AHs are unlikely to have the manoeuvre space to contribute to the defence unless it is part of a larger defended locality.

Defend a strong point

Strong points are usually associated with the defence of specific areas such as weapon sites or gun emplacements; important CSS facilities such as stores and ammunition; or other key installations, such as power plants, dams and railway yards. Strong point defence can also include those located in coastal defence installations, ports, harbours and airfields, and differ from battle positions in that they can be a single, fortified defended post or a series of posts grouped into a detachment or section locality. The purpose of a strongpoint is the retention of specific terrain in order to deny its use to a threat. The hub of the defence of a strongpoint is dug-in infantry, supported by tanks and other weapons. The ability of the AH to assist with strong point defence will depend on the manoeuvre space available and the availability of fire positions.

Defend-in-sector

The purpose of a defend-in-sector task is to prevent threat forces from passing beyond the rear boundary of the assigned sector while retaining flank security and ensuring integrity of effort within the parent unit’s scheme of manoeuvre. Army aviation may be tasked to defend an assigned sector when flexibility is desired and the retention of specific terrain is not necessary. This technique may incorporate elements of both an area defence and a mobile defence. It relies on the ability of the defending aviators to manoeuvre and have freedom of action within their assigned boundaries. The boundaries allocated to AHs will need to be sufficiently large to allow them a variety of fire positions, and suitable terrain and vegetation to use for cover and concealment.

Reserve demolition

The purpose of a reserve demolition is to provide a prepared demolition on a critical feature (eg, a bridge, crossing or other feature) for blowing on the instructions of the formation commander, as delegated to the commander of a demolition guard. The main task of the demolition guard is to ensure that the enemy does not capture the demolition before it has been fired. The demolition guard commander commands all troops at the demolition site, including the engineers forming the firing party.

Threat reconnaissance is likely to close rapidly on these entry points, closely followed by the advance guard. At the same time, or in advance, the threat may mount a coup de main to seize an entry point or points. The friendly formation's demolition guard is likely to be subjected to attacks by OS and attacks to seize these points. Parties of saboteurs may also seek to destroy important bridges, cutting off any potential withdrawal by friendly forces.

AHs will be able to form a protective screen or guard around the reserve demolition. Ideally, this will be in cooperation with armoured units. AHs will fall back to behind the reserved demolition but still provide direct fire support due to the range of their PGMs. AH crews can act as joint terminal air controllers for the coordination of OS, and a helicopter is the best form of defence against another helicopter which may be a threat in the form of a coup de main.

Route security

The purpose of route security is to protect lines of communication and friendly forces moving along them. Security should be provided by a combination of techniques, including fixed strong points, patrolling, route reconnaissance, the establishment of vulnerable point checks and VCPs, cordon security, convoy protection, and convoy escorts. Aviation, particularly AH elements, can play a key role in most of these techniques. The AH should provide the preferred method of convoy escort in high-threat environments due to its speed and flexibility.

Spoiling attack

During the defence, a commander may be able to seize the opportunity for a spoiling attack to disrupt enemy preparations for an attack. Spoiling attacks are normally launched against an assault force that is forming up or assembling for an attack. They are usually conducted against opportunity targets to destroy personnel and equipment, but not to secure terrain. A spoiling attack may also be achieved by an ABF.

Mechanised forces, supported by armour, aviation and OS, are preferred for spoiling attacks if space and terrain will allow. Dismounted forces may be required in complex terrain.

Chapter 6

Army aviation in stability operations

Introduction

Stability operations are conducted as completely integrated interagency operations. It is not unusual for military forces to be in support of the lead of another Government Department. Stability operations may therefore not only be defined in military terms. They may involve: reconstruction and economic support; establishing or supporting rule of law and developing accountable governance and HN security forces; or defeating military threats to stability.

Stability actions do not mean an absence of combat. Combat in stability actions may be as violent, and potentially more consequential, than in other warfighting actions. Combat will however have limited aims; generally to restore a situation to stability operations.

This chapter describes the role of Army aviation in stability operations, HADR and Defence assistance to the civil community (DACC).

Support to stability tactical actions

The primary military task in stability operations is the provision of security to protect and defend the population, and to create a platform for political, economic and human security. The following are the four characteristics of stability tasks:

- control
- influence
- compel
- support.

Considerations for Army aviation include:

- *Reconnaissance.* Army aviation, through extensive patrol activities, can provide information that contributes to a supported commander's intelligence, surveillance and reconnaissance plan to determine likely enemy targets, vulnerabilities and troop-carrying vehicles which may effectively undermine the enemy's centre of gravity.
- *Provision of information.* AHs can provide accurate information on the location and activities of hostile forces, and early warning of impending adversary action.

- *Versatility and adaptability.* Army aviation is extremely versatile, able to contribute to all lines of effort associated with stability operations.

Tactical techniques

Stability tactical techniques are military methods for accomplishing a result in particular situations. They are intended to improve efficiency and uniformity of action, and to ensure consistency. Techniques provide an opportunity for commanders to exercise a series of options according to the dictates of the situation. Stability tactical techniques include:

- cordon and search
- noncombatant evacuation
- the recovery of personnel and equipment
- traffic control posts and VCPs.

Cordon and search

Cordon and search involves the isolation of a chosen area and then its systematic search. The establishment of the cordon and the conduct of the search are two separate tasks that should be conducted as a joint military and interagency (including police forces) task.

Aviation will primarily contribute to the cordon. The considerations for cordon and search are detailed in Chapter 4.

Noncombatant evacuation

Noncombatant evacuations may be conducted in either permissive or non-permissive circumstances. They seek to relocate threatened noncombatants to a safe place. Noncombatant evacuation requires land forces as part of a joint interagency TF to conduct participate in or contribute to the evacuation of Australian nationals and/or other approved foreign nationals from a threat area. The aviation contribution to noncombatant evacuations is as follows:

- *Permissive.* A noncombatant evacuation conducted in a permissive environment most commonly occurs following natural disaster or civil unrest where no resistance to evacuation is expected. In such circumstances there is HN consent and support for those wishing to leave. Aviation elements may provide a range of assistance to authorities, including:
    - information on the contemporary operating environment
    - networked communications
    - the transport of personnel
    - liaison with community leaders, evacuees and the evacuation handling centres

    - liaison with habitually affiliated support organisations.

- *Non-permissive.* A noncombatant evacuation conducted in a hostile environment most commonly occurs when the HN's civil and military authorities have lost control and there is a general breakdown in law and order. The lift aircraft, escorted by the AH, is likely to be a key component of any noncombatant evacuation in a hostile environment. In addition to the services provided in a permissive environment, Army aviation would also provide security in the form of the following:
    - information on hostile forces or hot spots
    - convoy escorts
    - route clearances
    - quick-reaction forces.

Recovery of personnel and equipment

There are times when personnel or equipment may be cut off in an area from which they cannot extract themselves. In a non-permissive environment or when a terrorist organisation is active, the extraction of those assets may require a special recovery operation. Depending on the tactical situation, this may incorporate elements of a raid, attack, air assault and withdrawal in contact. Army aviation would contribute both AH and TLH/MLH to any air assault operation. AH sensors are employed primarily to gather information. PGM may be useful in some situations (eg, destroying hostile vehicles or creating entry points in barricades), however, the aircraft firepower is primarily a deterrent.

Traffic control posts and vehicle checkpoints

Traffic control posts and VCPs form part of road and track movement control. They can be established by security forces or any other land-based force across the range of military activities. A higher planning HQ is generally responsible for establishing traffic control posts and VCPs on all route networks through an established control organisation. Aviation can provide on-call firepower to the organisation manning the checkpoints or control points.

Enabling humanitarian assistance and disaster relief

A military force is only likely to provide HADR when the security conditions in an area preclude the involvement of non-government organisations and other civil agencies. HADR is not always conducted in a permissive or benign environment requiring a peacekeeping force or other force for protective tasks. In enabling HADR, AHs might contribute to the secure environment that will allow non-government organisations and other civil agencies to operate. TLH and MLH could assist with the delivery of food and potable water, and transport medical teams to provide first aid or AME.

Defence aid to the civil community. DACC is a type of Defence assistance provided to civilian communities and authorities in Australia where the use of force is not involved. DACC includes Defence assistance to state/territory governments during emergencies/disasters, for events of public significance and for civilian counter-disaster training. DACC also includes assistance to Commonwealth or state/territory governments and their civilian authorities in the performance of law enforcement related tasks. It also includes the provision of training assistance.

Tactical application. Supporting considerations for the application of DACC are as follows:

- *Types of assistance.* The following types of assistance can be provided under DACC:
    - *Counter-disaster and emergency assistance.* AAAvn can provide TLH and MLH which can assist with the delivery of food and potable water, and transport medical teams to provide first aid or conduct AME.
    - *Non-emergency assistance.* AAAvn provides:
        - special AME of civilians
        - ceremonial support.
- *Command and control.* AAAvn C2 during DACC tasks will generally use extant BG or CT structures.

Chapter 7

Army aviation in shaping and enabling tasks

Introduction

The success of land operation also hinges on the conduct of shaping and enabling tasks which must occur in all operational phases and all types of operations. They are as follows:

- *Shaping.* A task conducted to establish conditions for the success of the decisive task. At every level we must seek to establish conditions which enhance our actions and degrade the enemy's. Shaping will seek to retain the advantage for the friendly force while destroying the coherence and tempo of the enemy; and it will seek to determine, expose and create enemy vulnerabilities for exploitation.
- *Enabling.* Enabling tasks are actions that must be undertaken by a joint force conducting any land operations task. They are tasks that must be conducted to enable the conduct of all other tasks.

Support to shaping tasks

Shaping is conducted in all operations and across the spectrum of conflict. Shaping is continuous. Most peacetime military engagements can be considered shaping tasks. In conflict shaping tasks set conditions for and enhance the success of offensive, defensive and stability actions.

Shaping tactical actions

Engagement. Engagement actions range from: meeting with civilian and military leaders and officials to influence their priorities, perspectives, and actions; to the conduct of exercises and deployments with military forces of friendly nations to enhance our understanding of and develop interoperability with a potential operating environment; and to assisting in the development of friendly nation military capacity. Lift aircraft provide mobility and increase the reach of the commander's engagement activities.

Reconnaissance. Reconnaissance is a critical shaping action. Reconnaissance should be directed by the commander and specific commander's critical information requirements to identify enemy weakness and critical capabilities. Continuous reconnaissance will also identify opportunities. AHs provide AAAvn

dedicated reconnaissance capability, however all aviation operations continuously gather and report information.

Security. Security actions support the friendly force retaining the initiative in the offence while reducing the enemy's initiative in the defence. Security actions assist the commander to generate tempo and to develop focus by providing early and accurate information on the enemy. Security actions also enhance that advantage by degrading the ability of the enemy to understand our intentions. Aviation elements can be tasked directly to support security operations discreetly or in combined arms teams. Due to the speed and mobility of aviation assets, patrolling of rear areas can be conducted efficiently without impacting primary efforts.

Mobility. Moving faster than the enemy can generate a significant tempo advantage to retain the operational initiative. At the tactical level mobility relies on protection, agility and the ability to move freely across a wide range of terrain both in and out of direct fire contact. Mobility also relies on the ability to transition forces in contact or in close proximity to the enemy, and to move through or across natural and man-made obstacles. Aviation can be employed to avoid those obstacles which would otherwise require significant reduction or breaching. In deliberate mobility operations, such as a breach lift and attack, aviation can provide OS and air assault capabilities.

Information and influence. The information dimension influences all other actions in the land domain. Information and influence actions are continuous. The purpose of information actions is to generate an advantage over a threat or enemy by better manipulation of the use, content and flow of information.

Information and influence actions should be framed to diminish or disrupt the enemy's or threat's decision-making and information flows while enhancing or protecting friendly information flows, messages and decisions. Information and influence actions include operations security, deception, computer network operations, electronic attack measures, electronic protection measures, counterintelligence, psychological operations and public affairs/information. Attack and lift aviation can enable information and influence actions through superior reach and speed.

Enabling tasks

Enabling actions are integral to any task. They influence the planning and execution of any stage of an operation, task or action. AAAvn can assist with the following:

- *Sustainment.* AAAvn provides a lift capability which can be allocated in direct support of CSS especially in locations dislocated from the main body. Aviation can greatly increase CSS tempo when timely delivery is required
- *Force protection.* Force protection minimises vulnerabilities of personnel (military and interagency), equipment and facilities, and preserves the

operational effectiveness of the force. Force protection can include generic passive and active measures such as camouflage and concealment, armour protection, dispersion, and alert levels or posture. Aviation contributes through active patrolling with attack and lift assets.

Chapter 8

Aviation combat service support

Introduction

Army aviation CSS encompasses all the non-flying activities required to provide direct support to flying. Army aviation commanders sustain their aviation assets through the provision of CSS, and through the protection of CSS elements and personnel.

The sustainment of aviation presents a challenge to all commanders and logisticians. Aviation activities are characterised by flexibility and tempo with a high demand for aviation fuel, ammunition, communication and information systems, and the timely supply and return of repair parts. The support provided by CSS assets must satisfy the tempo of aviation missions and provide linkages to the supply chain and logistic support outside the aviation element. This chapter details the CSS considerations for supporting Army aviation.

Organisation

Unlike most other arms and services, aviation uses a modified echelon system to describe its fighting and CSS elements, this is due to a tendency to collocate all echelons. Comparable components to the echelon are as follows:

- *F echelon.* Includes aircrew, aircraft, tactical CP, a forward repair team (FRT) and FARP if deployed forward of the main body.
- *A echelon.* A echelon has the personnel, vehicles and equipment that must be readily available to sustain the fighting troops at any period during the battle. Due to the maintenance-intensive nature of aviation the A and F echelons are normally collocated at an FOB.
- *B echelon.* The B echelon has those CSS resources – including personnel, vehicles and equipment – not required in the F and A echelons. B echelons may remain in their home location.

The success of aviation sustainment depends on accurate forecasting and timely demands to formation- and force-level logistics. Many of the parts and supplies required to sustain aviation cannot be held forward and require logistics elements to source and push forward into the theatre/TAOR as required.

Functions

The CSS functions are as follows:

- supply support
- transport support
- maintenance support
- engineering sustainability support
- personnel support
- combat health support.

Supply support

Aviation supply support is executed through the modified echelon system, and although it follows the same basic process, there are slight variations which are unique to the circumstances of each deployment.

Critical classes of supply. There are the following three critical classes of supply required for aviation during periods of high tempo:

- *Class 3 – petrol, oil and lubricants.* Aviation fuel comes into Class 3 (aviation turbine fuel is called AVTUR).
- *Class 5 – ammunition.* The relevant ammunition is the 7.62 mm, 30 mm gun, the 70 mm rocket, the Hellfire, chaff and flares.
- *Class 9 – repair parts.* This is the class for aviation spares.

These classes of supply require intensive management at all levels. The efficient delivery of these classes of supply is paramount in ensuring that the full range of aviation capabilities can be exploited. They will be distributed by third-line CSS units directly to aviation locations dependant on the requirement and the scenario.

The following classes of supply will require third-line CSS support for deployed aviation units:

- *Class 3 – petrol, oil and lubricants.* Unit fuel stock holdings will be between two and six truck tanker fuel (aviation) and, depending on aircraft types deployed, is sufficient to sustain operations for 24 to 48 hours without resupply. The replenishment of aviation fuel will follow the normal Army CSS procedures of direct delivery to units, unit collection, distribution points and dumps. Refuelling point (aviation), a third-line capability, will usually be collocated with third-line bulk fuel installations in order to refuel aircraft which transit through third-line CSS organisations.
- *Class 5 – ammunition.* AH squadrons will forecast ammunition based on operational tempo. Higher usage rates require CSS assets to move ordnance forward to the FARP locations. AH ammunition takes significant volume and weight and, due to its dangerous nature, requires dedicated lift

assets to bring into theatre. Chaff and flare stock holdings for both AHs and TLH will depend on the threat and the expected flying rate.

- *Class 9 – repair parts.* The nature of repair parts include consumables, breakdown spares and repairable items, and is fundamentally different from ground major systems repair parts. Some rotables, such as rotor blades and engines, are highly valuable (eg, one to two million dollars each) and require intensive supply, engineering and configuration management. Rotables requiring repair or overhaul need to be urgently and efficiently evacuated from the AO to fourth-line national or international repair and overhaul facilities. Other significant differences and distinctions include:
    - *First line.* Due to cost constraints, the size of components and the requirement for mobility, aviation unit first-line repair parts stock holdings will be optimised and tailored to ensure that the aviation unit or sub-unit deploys with holdings that will satisfy the planned scenario and missions.[1]
    - *Second and third line.* There are no second- or third-line stock holdings of aviation spares. Aviation spares are stocked and distributed from the fourth-line national support base (NSB).
    - *Fourth line. A*viation repair parts are stocked either in contractors' facilities or in Joint Logistic Command warehouses. Wherever possible, fourth-line holdings should be collocated at the air or sea point of disembarkation to allow expeditious supply to units as well as the prompt return of repairable items from the AO to deeper maintenance facilities.

Transport support

Aviation elements do not have sufficient quantities of first-line transport to self-deploy and rely heavily on third-line transport assets. Foresight, coordination and the prioritisation of third-line assets are required in order to enable aviation elements to deploy within mandated time frames. Additionally, third-line recovery support is required in the event of an aircraft accident.

Maintenance support

There are two levels of maintenance conducted in support of Army aviation. Operational maintenance is undertaken by unit maintenance personnel in the field and in barracks environments, and deeper maintenance is undertaken by contractors in the NSB. Contractors may be required to undertake deeper maintenance further forward.

At the tactical level, maintenance support deals with the availability of equipment to the operator. This is through component repair, modular repair or the complete replacement of equipment. Action is taken to ensure that the time between failure of an item and its return to the operator in an operable condition is minimal.

1. Optimising stock holdings at a unit is in line with the concept of mission sufficiency.

Aircraft maintenance. Attached tradespeople and structures in each aviation regiment TSS and technical support troop (TST) provide operational maintenance to aviation. The maintenance capability at unit level is governed by the time available for repair and the engineering complexity of the task. Maintenance beyond the scope of unit-level maintenance organisations will be back loaded to the NSB contractors for deeper maintenance.

Forward repair team. An FRT may be deployed forward to support aircraft and will have the ability to undertake limited operational maintenance or contingency maintenance and battle damage repair (BDR). An FRT may be detached to a FARP depending on the operational requirement.

Forward operating base (A echelon). The FOB will contain RAEME tradespeople from the squadron TST, who will carry out operational or contingency maintenance and BDR (including servicing and minor repairs) to aircraft and associated equipment.

B echelon and contractor support. Generally, CSS activities within the B echelon are likely to be confined to non-aircraft CSS support (eg, personnel reinforcement). This is because most unit CSS assets are deployed with the A echelon. Deeper maintenance is conducted by the contractor either in the NSB or in the intermediate staging base or, if the theatre plan permits, collocated with third-line CSS elements.

Forward arming and refuelling point maintenance support. The aviation squadron OPSO on advice from the TST commander is to determine whether a technical support element is required at the FARP taking into consideration the following:

- the task or mission
- the type of FARP (ground or air deployed)
- the distance to the FARP from the FOB
- the time and mode of travel to the FARP from the FOB
- the total time for the FARP to be deployed
- enemy activity or threats at the FARP (the likelihood of an BDR requirement)
- the environmental conditions
- the ability to carry repair parts
- the maintenance required to achieve BDR and ferry flights and to supplement FRTs at the FARP.

Where longer repair times are assessed, aircraft will be back loaded to the FOB or back loaded straight to deeper maintenance facilities. The unit S4 staffs initiate the request through the aviation brigade HQ for the deployment of contracted aviation maintenance elements. Depending on the maintenance to be conducted

and the type of activity to be undertaken, the contractor will position as far forward as possible to provide assistance.

Engineering sustainability support

Typical sustainability support tasks for aviation elements include:

- mobility support, particularly where routes are likely to become damaged (this may include bridge support and route improvement)
- bunding for bulk fuel installations and around ammunition storage sites (shielding)
- establishing water supplies
- erecting aircraft hangars and other supporting infrastructure
- selecting FOB and FARP locations and providing maps
- preparing aviation areas, including the creation of taxiways, landing pads and hides.

The Emergency Response Squadron is a fire and rescue capability maintained by combat engineers to support aviation operations. Typically, two teams are deployed with emergency vehicles to support a deployed location.

Personnel support

Army aviation has no unique requirements for personnel support.

Combat health support

Medical support. The medical support to aircrew will often require the provision of aviation-trained doctors; these are not usually available at unit or formation level. Greater emphasis on primary care is required to maintain the small number of mission-critical aircrew. A combined AME and Emergency Response Squadron team is required to extract trapped and injured aircrew from damaged aircraft.

Tactical aeromedical evacuation. Aviation does not possess organic medical support. AME teams must be provided if this is a tasking requirement.

Application

Planning for aviation sustainment

Forward planning is critical to achieving successful CSS. A realistic prediction of the demand for support – taking into account the destination, demand, distance and duration of an aviation activity – is crucial in defining how best to support a particular mission or activity.

Destination. It must be assumed that an aviation unit or element may be deployed offshore. Aviation forces may be required to support two or more TFs concurrently, and this will have implications for the following:

- *Force preparation and strategic deployment.* CSS units supporting aviation elements must be configured to permit rapid deployment using strategic transport. Staff procedures and planning must take account of the requirements to deploy by strategic transport, and units should be trained and exercised in its use.
- *In-theatre sustainment.* Experience has shown, and circumstances may dictate, that sustainment from the NSB may not be established immediately on deployment to a theatre. Therefore, aviation and support CSS units should:
    - be sustainable in accordance with land HQ sustainability planning guidelines for limited periods without recourse to external support
    - be capable of integration with joint, multinational and HN logistic infrastructure and CSS capabilities
    - have appropriate communications and information technology assets to interface with deployed and home-based logistic infrastructure
    - have the necessary specialist CSS capabilities at both first and third lines to support aviation activities. Such capabilities include the handling and storage of petrol, oils, lubricants and explosive ordnance, materials-handling equipment, and transportation assets.
- *Modularity.* Given that aviation forces may be deployed in multiple locations in support of one or more TFs, the CSS elements within the unit must be modular (ie, able to provide discrete capability bricks). This enables the minimum support commensurate with the size of the fighting force to be deployed to provide robust CSS.

Demand. The use of aircraft supplies and materiel (particularly Class 9) is likely to be high. The prediction of demand through accurate modelling, the management of resources and the direction of frequently limited support are key factors in providing successful CSS. Commanders and their staff must seek to efficiently manage the expenditure of resources and should apply the principles of foresight, responsiveness and economy to ensure mission sufficiency in their planning. When managing these resources, the following factors should be considered:

- *Aviation fuel.* Fuel consumption by aviation is normally several times greater than for a supported ground manoeuvre organisation. Limitations on the capability and mobility of integral wheeled bulk fuel transport imply that innovative and new solutions must be sought to take advantage of bulk and air-portable refuelling assets, including those owned and operated by the air and maritime components.
- *Ammunition.* An aviation element is likely to employ a wide range of specialist ammunition types, and expenditure rates are potentially high. The

likely requirement to ground dump stocks within the force support group and the limitations of cargo vehicles available to resupply to units will impose constraints on the mobility and responsiveness of third-line transport assets.

- *Repair parts.* Planning for Class 9 resupply should be conducted as early as possible. Parts requirements should be forecast and, when possible, the TF should consider deploying pre-packaged push Class 9 items to allow for the rapid replacement of parts within the theatre. Visibility of aircraft parts in transit and storage is essential and aircraft repair parts in transit must be accorded a high priority.

Distance. The reach of an aviation force is significantly greater than that of a ground force. This has implications not only for the demand of resources, particularly aviation fuel, but also for how CSS is provided. In the interests of achieving tempo, only the absolute minimum of CSS should be deployed forward in support of an aviation element. Furthermore, the security and protection of scarce CSS assets will become a paramount concern for both the operational and CSS commanders.

Duration. CSS provided by first- and third-line CSS assets must have the flexibility and mobility to optimise support to manoeuvre units without compromising their own security and the integrity of their resources. At the operational level, the duration of aviation flights may be protracted and the CSS provided by third-line CSS units must be capable of sustaining an enduring commitment.

Key planning factors

The commander and planning staff must always be conscious of the limitations imposed by CSS capabilities and stock. These limitations should be considered as part of the commander's MAP where logistic staff can provide input through the logistic preparation of the battlefield. Logistic preparation of the battlefield seeks to identify those constraints or limitations in CSS which may affect the commander's ability to manoeuvre. This is best conducted prior to developing the COA so that staff effort is not wasted on a COA which is not logistically sustainable.

Flying rate of effort. In order to enable adequate resourcing of aircraft, repair parts, manning and equipment, the planned rate of effort for Army aviation missions must be forecast to a number of agencies. These agencies include unit technical support staff, Army aviation enabling organisations and the deeper maintenance contractor.

Deployment sites. Where practicable and for sustained action, aviation operates from FOBs which facilitate safe and sustained flying. This should minimise environment-related aircraft damage and unscheduled maintenance. These sites will also include appropriate facilities for the provision of 24-hour CSS support and the management of fatigue in aircrew and maintenance personnel. Where this is not practicable, aviation can operate from austere field sites, necessitating responsive and flexible distribution and materiel support organisations. The

preparation of field sites may include semipermanent hardstanding and protective works to support maintenance, vehicle movement and security requirements.

Environmental conditions. Local environmental conditions, such as dust and sand, may decrease the mean time between failures of aircraft systems or components. It may be necessary to change the content and periodicity of servicing to compensate for harsh environmental conditions.

Amphibious operations. When aviation logistic support is provided from aviation-capable amphibious ships the following factors should be considered:

- limited space and facilities
- resupply to ship-borne CSS elements
- the distance between ship- and land-based CSS elements
- the content and frequency of servicing requirements due to the marine environment
- refuelling and rearming – normally, the refuelling of aircraft onboard ships is the responsibility of the Navy, but it may be conducted by the ship's Army detachment following necessary certification by the Navy. Army personnel, under Navy supervision, carry out rearming onboard ship.

Relationship with the Royal Australian Air Force

The authority for the airworthiness of all aircraft in the ADF is vested in the Chief of Air Force. Army conducts all aviation engineering, maintenance and supply support (Class 9) in accordance with the Technical Airworthiness Authority regulatory framework. The Air Force provides aviation specialist engineering, maintenance and supply training to the extent that all RAEME aviation IET is conducted by Air Force and some specialised technical repair capabilities only exist within RAAF.

Aircraft recovery

Aircraft battlefield recovery requires the appropriate RAEME personnel, tools, recovery equipment, a flatbed truck or a recovery aircraft, an infantry force to provide protection, and C2. Where possible the recovery should be supported by continued observation (AH or unmanned aircraft systems) and on-call OS.

The aviation force must coordinate the recovery with the JPR coordination centre in the JTF as early as possible to identify responsibilities and establish the aircraft battlefield recovery plan.

The most effective form of recovery for an aircraft that cannot fly to a maintenance facility is by air. If aviation support is not available, as a last resort, road or rail transport may be considered.

Forward arming and refuelling points, and forward operating bases

FARPs and FOBs are two key forward CSS capabilities used to support and project aviation forces. Fuel and ammunition replenishment for a FARP and an

FOB is delivered directly from A echelon resources or, wherever possible, directly from third-line CSS resources. Alternatively, distribution points which have pre-positioned stocks provide the means for replenishment. Briefly, the CSS capability for both is as follows:

- *Forward arming and refuelling point.* A FARP will have the capacity, with sufficient personnel and equipment, to simultaneously rearm and refuel two TLH/AH aircraft as a minimum. A FARP will hold sufficient organic stock holdings for two refuels and one armament replenishment for two aircraft when operating independently. A FARP may then redeploy back to either a squadron or FOB location or restock from a distribution point and deploy in support of another aviation mission. FARP capacity will be scaled as necessary for the projected missions. FARP crew will not be able to accomplish their tasks and defend themselves simultaneously. A protection party should accompany all FARPs.
- *Forward operating base.* The aviation FOB will include a maintenance element for BDR, fault diagnosis and expedient repairs. In addition, other elements such as an ammunition technician may be attached if deemed necessary to support the mission. The quantity of stock normally held in an FOB may require either additional transport vehicles or direct delivery of stocks from third-line CSS assets. Stocks are to be kept on wheels. Also, the FOB will always contain a FARP and may be augmented by a refuelling point (aviation) from third-line assets.

Tasks and responsibilities

Aviation regiments. Aviation units may operate with their combat and support elements separated by hundreds of kilometres. The brigade aviation maintenance officer at HQ 16 Avn Bde is responsible for the technical control of maintenance activities in deployed aviation units and is the senior logistician for all other aviation activities.

Aviation regiment first-line combat service support organisations. Aviation regiments have two squadrons on establishment to deliver CSS, including the TSS and the CLSS. The aviation regiment commander commands the TSS and the CLSS.

Composite aviation regiment or squadron. Where Army aviation needs to deploy a composite aviation regiment and/or squadron, tailored composite aviation CSS elements are formed to support assigned aircraft types.

Aviation squadron first-line combat service support organisations. Aviation squadrons have two troops on establishment to deliver CSS, including the TST and the logistic support team. The squadron OC commands the TST and the logistic support team.

Liaison. An effective S1/S4 liaison network is imperative for logistic coordination with neighbouring HQ. Non-aviation-specific CSS assistance for aviation teams

deployed independently may be required from neighbouring formations as aircraft activities outreach the capacity of organic CSS elements to support routine demands. Each aviation regiment logistic LO normally fulfils this liaison role to provide the interface between first- and third-line CSS organisations.

Coalition operations considerations

Where operations are conducted with coalition partners, interoperability increases flexibility in CSS in such circumstances. Additionally, logistic compatibility, interchange ability and, in some cases, commonality significantly enhance capability.

Australian-sourced aircraft support

As a general rule, Australian Army aviation aircraft operating within a coalition will be supplied and maintained by qualified Australian technicians in order to maintain compliance with ADF airworthiness standards. However, other aircraft support, such as refuelling support, may be conducted by other nations or contractors. These arrangements are normally negotiated prior to the commencement of an activity.

Non-Australian sourced aircraft support

Notwithstanding the preference for Australian support, there may be opportunities for aircraft support from other nations or contractors. Negotiations for aircraft support are not normally conducted by the aviation units or sub-units, and the level of the negotiating authority is dependent on the type and duration of support required. For example, negotiations for support on a UN mission are generally conducted through HQ JOC and the Strategic and International Policy Division.

Specific considerations

Detailed technical advice relating to interoperability and coalition operational considerations should be sought from HQ 16 Avn Bde.

Chapter 9

Army aviation employment in specific environments

Introduction

This chapter discusses the impact of specific environments on flying. It considers planning factors and any changes to operating procedures in tropical, desert, cold, urban and CBRN environments, and in mountainous terrain.

Tropical environments

Impact on capability

Significant factors that impact the capability of aviation in tropical environments include:

- Poor weather periods particularly during the monsoon may curtail or stop flying for periods of time. Additionally, poor weather including low cloud and reduced visibility make navigation difficult and may prevent flight from one side of a mountain range to the other.
- Periods of sustained heavy rain reduce the effectiveness of sensors, can affect the electronics of aircraft and can cause a greater than normal number of avionic failures.
- Travel on road and across country will become more problematic for land forces, and may place a potentially higher reliance on aviation for mobility and other support. This may necessitate an increase in the rate of flying and increased tempo for aviation.
- Fields of view and observation are likely to be impeded by the vegetation and canopy. This has an impact on sensor and weapons effectiveness. Additionally, low-flying aircraft may not be able to positively identify or locate the source of enemy fire.
- Dense vegetation makes the selection of suitable and sizeable PZs and LZs difficult. This may also reduce the number of aircraft which can use a PZ or LZ at any one time or dictate whether an aircraft can land to complete its task. Thus dense vegetation may reduce the tempo of tactical actions.
- Higher temperatures affect the performance of aircraft and reduce their capacity to carry combat loads. Additionally, a reduction of the amount of

fuel carried and, therefore, aircraft range may be required to compensate for reduced aircraft performance.

- All troops deployed into theatre need to undergo a period of acclimatisation. Aviation forces will also need to undertake this acclimatisation to avoid a higher than normal risk of accident. Graduated acclimatisation including theatre-specific training is required.

Planning factors

The following factors need to be emphasised when planning for missions in a tropical environment:

- adverse weather, particularly monsoonal conditions
- a possible increased tempo
- a degraded aircraft flight performance
- difficulty in combat identification
- reduced sensor footprint and effectiveness due to vegetation and weather
- possibly reduced aircraft combat loads due to reduced aircraft performance
- preparation and location of aviation operating bases, FOBs and FARPs
- the suitability of PZs, LZs and other operating locations
- possible lower aircraft serviceability rates and a changed maintenance regimen necessary to support flying rates
- the requirement for combined arms team synchronisation and training
- the requirement for acclimatisation and in-theatre training.

Desert environments

Impact on capability

Significant factors that impact on the capability of Army aviation in desert environments include:

- Routine aircraft maintenance in sandy and dusty conditions is significantly more difficult to carry out and could affect readiness and the availability of aircraft.
- The abrasive nature of sand and dust on and inside moving components (eg, engines and rotor blades) significantly reduces their service life and the mean time between failures. This in turn impacts on the rate and intensity of maintenance, the number of spares which must be held and the overall serviceability of the aircraft.
- Poor weather including low visibility caused by blowing dust or sand, and strong winds may adversely affect aviation capability.

- Extremes of heat and cold affect the performance of personnel and aircraft. When the temperature of aircraft systems exceeds the cooling system capacity, avionics and sensors may not function correctly. This may also affect helicopter lift capacity and result in reduced payloads and range.
- The risk associated with low-level flight increases in periods of reduced visibility, reduced visual acuity and reduced contrast. Additionally, operating at night with high ambient moonlight may adversely affect visual perception of terrain features and the utility of NVDs.
- Navigation is made difficult in areas with poor mapping and/or flat featureless terrain similar to that depicted in Figure 9–1.
- The extremes of heat affect the performance of thermal imaging equipment on sensor packages, including the sensors on the AH.

Figure 9–1: Featureless desert terrain

Planning factors

The following factors need to be emphasised when planning for missions in desert environments:

- Rapid changes in climatic and environmental conditions can prohibit or limit flying.
- Environmental conditions, particularly sand and grit, can significantly increase wear on aircraft components and reduce aircraft availability.
- Maintenance tempo must increase to maintain aircraft serviceability, necessitating the requirement for increased numbers of Class 9 items.
- Aircraft flight performance may be reduced, thus decreasing aircraft payload and range.

- TTP require modification during periods of extended visibility to reduce the possibility of detection and engagement by enemy weapon systems.
- There is a requirement for adequately sheltered maintenance and supply facilities, normally found at fixed operating bases, to enable aircraft maintenance during periods of poor weather. Figure 9–2 depicts a fixed operating base in a desert.
- The vulnerability of FOBs and FARPs to detection and interdiction by the enemy may increase during periods of extended visibility.
- Flying at night is preferable in order to reduce the enemy's ability to successfully engage aircraft.
- There is a requirement for acclimatisation and in-theatre training.

Figure 9–2: Fixed operating base

Cold conditions

Impact on capability

Significant factors that impact on the capability of aviation in cold conditions include:

- Low temperatures, wind, ice and snow can impact on flying, serviceability rates, maintenance practices, ground support and personnel capability. Additional time is required to complete all ground support tasks.
- Poor visibility and strong winds may prohibit flying, requiring contingency plans.

- Flying over snow can be difficult due to glare, a reduced or nonexistent horizon, and limited or no depth perception. Additionally, glare can reduce the effectiveness of optical sensor systems.
- Preheating of key aircraft components may be required in temperatures below -10 °C.
- In temperatures below -25 °C aircraft are considered to be cold soaked and moving parts such as main rotor gearboxes should not be turned. This can be overcome by heating.
- During cold weather, aircraft develop increased static electricity. High levels of static electricity increase the level of risk during refuelling and rearming. Additionally, static electricity can adversely affect electrical systems and sensor performance.
- A thick layer of snow alters the appearance of the landscape terrain, making features more difficult to locate or interpret and navigation more difficult which is exacerbated by NVD operations.

Planning factors

The following factors need to be emphasised when planning aviation missions in cold conditions:

- the possible intensification of the aircraft maintenance regimen or alterations to practices and structures
- poor weather and environmental impacts on flying
- likely decreases in aircraft serviceability
- increases in the flying tempo to compensate for a reduction in ground mobility
- the need for appropriate personal protective equipment, ground support equipment and specialist aircraft equipment
- suitably heated and protected accommodation and maintenance facilities to enable maintenance to continue in bad weather
- the requirement for acclimatisation and in-theatre training
- the preclusion of flying due to very low temperatures and icing
- the requirement for access to meteorological forecast and observation technology.

Urban environments

Impact on capability

Significant factors that impact on flying in urban environments include:

- vulnerability of aircraft to all forms of enemy fire when operating at low airspeeds and at lower altitudes
- difficulty in seeing and avoiding the numerous obstacles and hazards to flight (eg, wires, towers and aerials) when operating at mission heights and airspeeds
- difficulty in distinguishing between friend and foe due to the nature of built-up areas
- difficulty in selecting, utilising and securing LZs due to the nature of the terrain (rooftop landings may be required)
- vulnerability of downed aircraft and aircrew to enemy action or hostile intent, unless rapidly reinforced or recovered
- degraded visibility due to urban conditions, especially wind patterns, smog from industrial sites and smoke from fire
- difficulty in navigating over built-up areas with few map references. Routes over built-up areas may increase the time on task and subsequent fuel consumption
- limited manoeuvrability and engagement ranges due to the varying heights of buildings and obstacles
- limited availability of locations and sizes for FARPs and the resultant impact on response times
- degraded communications due to urban sprawl and high-rise buildings. This may require the use of retransmission facilities
- diminished capacity of NVDs due to the higher light levels and numerous thermal sources found in urban areas.

Planning factors

The following factors need to be emphasised when planning for missions in urban environments:

- Flight altitudes and flying techniques will need to be adapted to the complex terrain. Structures are used to mask movement while avoiding collision in an environment where visibility may be limited, and operating speeds are selected to minimise the chance of being hit by enemy fire.
- Route selection will need to maximise masking by structures, minimise time over the area and avoid setting patterns of flight activity.

- Flying requires the latest enemy and friendly information to avoid fratricide, collateral damage and to avoid being engaged by the enemy.
- Flying should, where possible, take place at night to assist in mitigating the disadvantages of operating in urban areas and to aid in surprise.
- The element of surprise should be maximised.
- Combined arms team synchronisation and training should take place prior to the deployment.
- There is an increased need for fire support to suppress enemy fire in vulnerable LZs or PZs.
- Resources need to be allocated to LZ preparation and security.
- Preparation is required to rapidly respond for downed aircraft recovery and JPR.
- Planning is required to avoid or mitigate any potential conflict with civil flights.

Chemical, biological, radiological and nuclear environments

Impact on capability

Significant factors that impact on the capability of aviation in a CBRN environment include:

- nature of the agent or agents
- extent of contamination
- type of delivery means and the scale of the activity
- availability of decontamination facilities, equipment and agents
- provision of suitable personal protective equipment and aircraft systems
- provision of CBRN-suitable accommodation and maintenance areas
- degree of exposure to the environment
- ability to generate a sustained tempo in such an environment
- level of training and confidence in the equipment used both on the ground and in flight
- morale
- increased fatigue.

Planning factors

The following factors need to be emphasised when planning for missions in a CBRN environment:

- threat and the type of agent and the extent of contamination
- level of training and extent of equipment allocation
- aircraft modifications and personal protective equipment for aircrew
- availability of detection and decontamination equipment
- time required for the qualification of personnel
- planning and rehearsals for the redeployment of aviation ground elements
- tempo required
- requirement to continue to provide CSS.

Mountainous terrain

Mountains form part of each of the specific environments described previously. Due to their unique impact on flying, the planning factors are described separately in this section.

Nature of terrain

Mountainous terrain is characterised by marked differences in elevation with steep slopes and valleys over an extended area. At or above 10 000 ft above sea level, irrespective of the latitude, mountains will usually be sparsely vegetated and are likely to experience snow and ice at some times of the year. Mountainous areas are generally subject to strong unpredictable winds and have the capacity to generate their own local weather in the form of cloud and precipitation, sometimes in very short periods (under 60 minutes). Due to the lower air pressure at high altitudes, known as a high-density altitude environment, aircraft performance is reduced.

Success in mountainous regions is usually achieved by those forces which gain control of key terrain such as ridge tops, valley outlets, mountain passes, defiles and routes. Some of these have a canalising effect and can be controlled by forces dominating the heights around them. The battle for the heights will therefore be the governing factor in mountainous terrain. Accordingly, they will be likely objectives in an attack and will be the key terrain on which defences are based. Due to the restricted mobility of ground vehicles, the use of helicopters for tactical mobility, reconnaissance, resupply and evacuation may be decisive.

Impact on capability

Significant factors that impact on flying in mountains include:

- Operating at high-density altitudes reduces aircraft performance and controllability, which in turn reduces aircraft payloads, range and loiter time.
- Unpredictable local weather, particularly strong winds and low cloud, impacts on flying. Strong winds and turbulence are of particular concern when flying at high-density altitudes. This reduces the potential areas in which aircraft can be operated, possible loads that can be carried and the safety margins for flight.
- Reduced aircraft performance and the need to carry combat loads are likely to lead to a trade-off of fuel weight required to complete a mission. This will reduce the time on station and the range of the aircraft which impacts tempo and increases mission times.
- Flying at high-density altitudes is demanding. Aircrew training needs to be addressed early in the deployment to ensure that they can safely undertake the mission.
- The predominance of high ground and the need to operate in or around valleys, or on ridges and slopes, make aviation forces vulnerable to enemy fire. This will impact on the way in which missions are conducted and the need for synchronised OS.
- The likely increased need for aviation forces will increase the tempo of flying for Army aviation. This will impact on maintenance support, CSS, and issues such as fatigue management and the sustainment of forces.
- Due to slope and surface, the number of suitable LZs and other operating locations will be limited.
- Operations above 10 000 ft require supplementary oxygen.

Planning factors

The following factors need to be emphasised when planning for missions in mountainous terrain:

- possibility of poor and rapidly changing weather
- location of FOBs and FARPs
- possible reduced range of aircraft
- reduced aircraft performance and reduced combat loads in aircraft
- feasibility of using certain aircraft types in certain locations
- ability for aviation to employ a range of weapon systems
- requirement for fire support
- likely increase in tempo

- TTPs needed for safe flying
- need for night missions to increase the survivability of forces
- acclimatisation and in-theatre training.

Endmatter

Associated publications

This publication should be read in conjunction with the following publications and documents, in particular:

- *American, British, Canadian, Australian Coalition Operations Handbook, Edition 5*
- *Australian Defence Doctrine Publication 3.1, Joint Fire Support*
- *Australian Defence Doctrine Publication 3.3, Joint Airspace Control*
- *Australian Defence Doctrine Publication 3.9, Airborne Operations*
- *Australian Defence Force Publication 3.1.1, Joint Fire Support Procedures*
- *Land Warfare Doctrine 1, The Fundamentals of Land Power*
- *Land Warfare Doctrine 3-0, Operations*
- *Land Warfare Doctrine 3-0-3, Formation Tactics*
- *Land Warfare Doctrine 4-0, Combat Service Support (Developing Doctrine)*
- *Land Warfare Procedures - Combat Arms (Aviation) 3-1-2, Aircraft Support*
- *Land Warfare Procedures - Combat Arms (Dismounted Combat) 3-3-3, Tracking*
- *Land Warfare Procedures - General 3-8-2, Population Protection and Control Techniques (Restricted Access)*
- United States Army, *Field Army Techniques Publication 3.04.01, Aviation Tactical Employment*
- United States Army, *Field Manual 1-100, Army Aviation Operations*
- United States Army, *Field Manual 3-04, Army Aviation*
- United States Army, *Field Manual 3-99, Airborne and Air Assault Operations*.

Doctrine online

This and other doctrine publications are available via the Doctrine Online website located at: *http://drnet.defence.gov.au/ARMY/Doctrine-Online/Pages/Home.aspx*. Paper copies may be out of date. Doctrine Online is the authoritative source for current doctrine. Users are to ensure currency of all doctrine publications against the Doctrine Online library.

Photographs and multimedia

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Gender

This publication has been prepared with gender-neutral language.

Illustrations

Glossary

The principal source for Australian Defence Force terms and definitions is the Australian Defence Glossary located at *http://adg.eas.defence.mil.au/adgms*. Terms and definitions contained within this publication are in accordance with the business rules, guidelines and conventions for the Australian Defence Glossary at the time of its release.

aeromedical evacuation

An air activity conducted to transport ill or injured personnel under medical supervision to appropriate medical treatment facilities.

agility

The ability to transition between tasks rapidly.

air assault

Manoeuvre of forces (combat support, combat service support and combat) in vertical lift aircraft as part of a combined arms team under the command of an Air Manoeuvre Force Commander.

airworthiness

A concept, the application of which defines the condition of an aircraft and supplies the basis for judgement of the suitability for flight of that aircraft, in that it has been designed, constructed, maintained and operated to approved standards and limitations, by competent and authorised individuals, who are acting as members of an approved organisation and whose work is both certified as correct and accepted on behalf of Defence.

altitude

The vertical distance of a level, a point or an object considered as a point, measured from mean sea level.

armed reconnaissance

An air mission flown with the primary purpose of locating and attacking targets of opportunity (that is enemy materiel, personnel, and facilities) in assigned general areas or along assigned ground communication routes, and not for the purpose of attacking specific briefed targets.

attack

To take offensive action against a specified objective.

attack by fire

Engage an enemy with direct fires, supported by indirect fires, without closing with them.

battlegroup

A combined arms grouping based on the headquarters of an aviation, tank, cavalry or infantry unit.

battlespace

Those geographical, physical and virtual areas; that includes the traditional domains of land, air and sea, space, the electromagnetic spectrum, and cyberspace, which are of concern to a commander. Note: Also embraces the social, political and temporal contexts in which conflict is waged.

casualty evacuation

The process of moving any person who is wounded, injured or diseased to and/or between health facilities.

combat service support

The logistic actions, processes, functions and services that are undertaken during the delivery of support to a combat force or combat support force element.

deeper maintenance

This level of maintenance includes tasks that are more complex than operational maintenance and normally require specialised equipment and technical skills and which relies on access to extensive support equipment and workshop facilities for successful conduct.

distribution point

A point at which supplies and/or ammunition, obtained from supporting supply points by a division or other unit, are broken down for distribution to subordinate units. Note: Distribution points usually carry no stocks; items drawn are issued completely as soon as possible.

electronic warfare

Military action to exploit the electromagnetic spectrum, encompassing: the search for, interception and identification of electromagnetic emissions; the employment of electromagnetic energy, included directed energy, to reduce or prevent hostile use of the electromagnetic spectrum; and actions to ensure its effective use by friendly forces.

engagement area

A target area of interest, where action has been planned to reduce the effect of an adversary's combat power.

escort

A combatant unit or units assigned to accompany and protect another force.

fire support coordination

The planning and executing of fire so that targets are adequately covered by a suitable weapon or group of weapons.

forward arming and refuelling point

A secure location in which fuel and ammunition are positioned for rapid refuelling and rearming of helicopters, or other tactical aircraft. A limited maintenance capacity may also be provided.

forward operating base

A location used to support operations without establishing full support facilities. Note: A forward operating base may be used for an extended time period and is supported by a main operating base.

host nation

A nation which, by arrangement:

a. receives forces and materiel of other nations operating on/from or transiting through its territory

b. allows materiel and/or organisations to be located on its territory; and/or

c. provides support for these purposes.

interoperability

The ability of systems, units or forces to provide services to and, accept services from, other systems, units or forces and to use the services so exchanged to enable them to operate effectively together.

joint air attack team

A combination of attack and/or scout rotary-wing aircraft and fixed-wing close air support aircraft operating together to locate and attack high-priority targets and other targets of opportunity.

joint task force

A force composed of assigned or attached elements of two or more Services established for the purpose of carrying out a specific task or mission.

landing zone

Any specified zone used for the landing of aircraft.

manoeuvre

Employment of forces on the battlefield through movement in combination with fire, or fire potential, to achieve a position of advantage in respect to the enemy in order to accomplish the mission.

mobile defence

Defence of an area or position in which manoeuvre is used with organisation of fire and utilisation of terrain to seize the initiative from the enemy.

national support base

Encompasses the full range of organisations, systems and arrangements, both formal and informal, that own, control or influence Australian Defence Force access to, and the use of, capability. Note: In geographical terms, the national support base refers to the Australian nation.

operational maintenance

Tasks directly related to the preparation of equipment for immediate use, recovery and minor repair of the equipment after use. Note: Operational maintenance tasks require a limited range of support equipment and may involve the limited use of workshop facilities.

payload

As an air power characteristic, the total weight and volume of passengers, cargo, sensors and weapons that an aircraft can carry.

pick-up zone

A landing zone used to emplane troops and/or load cargo.

precision-guided munitions

Any projectile, bomb, rocket or missile incorporating guidance to steer a non-ballistic trajectory at some part of its flight path to achieve probabilities of accuracy greater than ballistic munitions.

reconnaissance

A mission undertaken to obtain, by visual observation or other detection methods, information about the activities and resources of an adversary or potential adversary, or to secure data concerning the meteorological, hydrographic, or geographic characteristics of a particular area.

recovery

Actions taken to extricate damaged or disabled equipment for return to friendly control or repair at another location.

replenishment

The positioning of stock to meet a periodic resupply requirement.

search and rescue

The use of aircraft, surface craft, submarines, specialised rescue teams and equipment to search for personnel in distress on land or at sea.

situational awareness

Knowledge and understanding of the current situation, which promotes timely, relevant and accurate assessment of friendly, enemy and other options within the battlespace in order to facilitate decision making.

special operations

Military activities conducted by specially designated, organised, trained and equipped forces using operational techniques and modes of employment not standard to conventional forces. Notes:

1. These activities are conducted across the full range of military operations independently or in coordination with operations of conventional forces to achieve political, military, psychological and economic objectives.
2. Politico–military considerations may require clandestine, covert or discreet techniques and the acceptance of a degree of physical and political risk not associated with conventional operations.

spectrum of conflict

The full range of levels of violence from stable peace up to and including general war.

support by fire

A tactical technique in which a manoeuvre element moves to a position on the battlefield where it can engage the enemy by direct fire in support of another manoeuvring force. Note: The manoeuvre element does not attempt to manoeuvre to capture enemy forces or terrain.

sustainability

The ability of Defence to maintain its elements to meet government expectations, over time. Note: From an operational and tactical perspective, it is the ability of a force to conduct operations for the duration required to achieve its assigned

operational tasks, measured in terms of personnel, equipment, facilities and consumables.

synchronisation

The arrangement of related and mutually supporting actions in time, space and purpose to maximise their combined intended effects.

tactical area of responsibility

A defined geographical area for which responsibility is specifically assigned to a commander as a measure for the control of assigned forces and coordination of support.

task force

1. A temporary grouping of units, under one commander, formed for the purpose of carrying out a specific operation or mission.
2. A semi-permanent organisation of units, under one commander, formed for the purpose of carrying out a continuing specific task.

technical control

The provision of specialist and technical advice by designated authorities for the management and operation of forces. Note:

1. Technical control is exercised by capability managers, or by designated authorities through the capability manager.
2. For forces assigned to operations, technical control is exercised through the Chief of Joint Operations, and where applicable, through joint task force commanders.
3. Technical control advice may not be modified, but may be rejected in part or in total by a commander in consideration of operational factors.

tempo

The relative measure of the abilities of opponents to understand, decide and implement appropriate adaptations to plans, dispositions or postures.

versatility

The ability to perform a range of tasks.

Abbreviations

The principal source for Australian Defence Force abbreviations is the Australian Defence Glossary located at *http://adg.eas.defence.mil.au/adgms*. Abbreviations contained within this publication are in accordance with the business rules, guidelines and conventions for the Australian Defence Glossary at the time of its release. The following abbreviations are used throughout this publication; however, commonly used terms have been presented in their abbreviated format throughout the publication and have not been included in this list.

AACCE	Army aviation command and control element
ABF	attack by fire
AH	attack helicopter
AI	air interdiction
AME	aeromedical evacuation
AO	area of operations
ARH	armed reconnaissance helicopter
BDR	battle damage repair
BG	battlegroup
CLSS	combat logistics support squadron
CT	combat team
DACC	Defence assistance to the civil community
EA	engagement area
FAC(H)	forward air control (helicopter)
FARP	forward arming and refuelling point
FE	force element
FOB	forward operating base
FRT	forward repair team
HADR	humanitarian assistance and disaster relief
HN	host nation
JAAT	joint air attack team
JFECC	joint fires and effects coordination centre
JPR	joint personnel recovery
JTF	joint task force
LZ	landing zone
MLH	medium lift helicopter
NSB	national support base
NVD	night vision device
OAS	offensive air support
OS	offensive support
PGM	precision-guided munition
PZ	pick-up zone
RW	rotary wing
SBF	support by fire
TAOR	tactical area of responsibility

TF	task force
TLH	troop lift helicopter
TSS	technical support squadron
TST	technical support troop
VCP	vehicle checkpoint

The following abbreviations appear in tables and figures within the publication.

COIN	counterinsurgency