



Army

Land Warfare Doctrine 3-3-4 Employment of Armour 2016

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Australian Army

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LWD 3-3-4

Employment of Armour 2016

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Issued by command of
Chief of Army

A handwritten signature in black ink, consisting of several loops and a long horizontal stroke at the end.

MJ Constable
Colonel
Commandant
Combined Arms Training Centre

Preface

Aim

The aim of this publication is to describe the capabilities of armour in order to provide an understanding of their 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 armour as part of the Land Warfare Doctrine Operations series. This publication describes the employment of this corps. This publication complements [Land Warfare Doctrine 3-0, Operations](#) and [Land Warfare Doctrine 3-0-3, Formation Tactics](#). Detailed tactics, techniques and procedures are provided in the Land Warfare Procedures - Combat Arms (Mounted Combat) series.

Scope

This publication provides the following:

- description of the operating environment for the employment of armour
- an explanation of the role, the concepts of employment, and the command and control and sustainability issues associated with armour
- a description of armour; its organisations, capabilities and limitations
- a description of the missions and the types of operational tasks undertaken by armour, including the synchronisation of the battlespace operating systems within the combined arms team
- an explanation of the planning, tasking, coordination processes and control measures for armour capabilities
- a description of armour in offensive, defensive, stability and enabling activities within a whole-of-government approach
- an explanation of the unique combat service support structures and systems that support armour and its impact within the mission space
- an explanation of the employment of armour in specific environments.

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Chapter 1

Fundamentals of armour employment

Introduction

Armour is a term given to describe any armoured fighting vehicle (AFV), including main battle tanks (MBTs), infantry fighting vehicles, cavalry reconnaissance vehicles (CRVs) and APCs, and the military organisations that employ such systems, but does not include the protected mobility fleet of vehicles (ie, the protected mobility vehicle – medium and the protected mobility vehicle – light).

Generally, armour has the following characteristics:

- shock action
- versatility
- adaptability.

Shock action. Shock is the paralysing effect created by rapid and simultaneous actions that render an enemy incapable of making an effective response. Armour achieves shock by combining surprise, a concentration of force and aggression (both physical and psychological). Shock action disrupts the enemy's plans, destroys their cohesion, saps morale and weakens their will to resist. Shock action is most effective when directly targeted at the enemy's centre of gravity and critical vulnerabilities.

Versatility. Versatility is the ability to perform a range of tasks. The inherent versatility of land forces enable them to adapt to the constantly changing conflict environment. Armour can be employed throughout the spectrum of conflict and across the range of military activities. Armour gains its versatility from its ethos, its equipment and its organisation. The versatile ethos is instilled through collective training and the consistent application of mission command. The variety and type of technology inherent in the vehicles and ancillary equipment amplifies this versatility.

Adaptability. Adaptability is the ability to embrace new or unforeseen tasks. The ability to understand constantly evolving and complex environments can only be achieved through a physical interaction with the population and the enemy. Armour achieves adaptability through its ability to learn from experience and evolve behaviour to deal with changing circumstances. Armour can tailor their procedures rapidly because of their training, procedures, equipment and inherent flexibility.

Spectrum of conflict

Armour is capable of readily meeting tasks throughout the spectrum of conflict. Armour can support disaster relief as part of peacetime military engagement, monitor a ceasefire as part of a UN-mandated operation, conduct cordon and search tasks as part of counterinsurgency, and participate in major combat (see [Figure 1–1](#)).

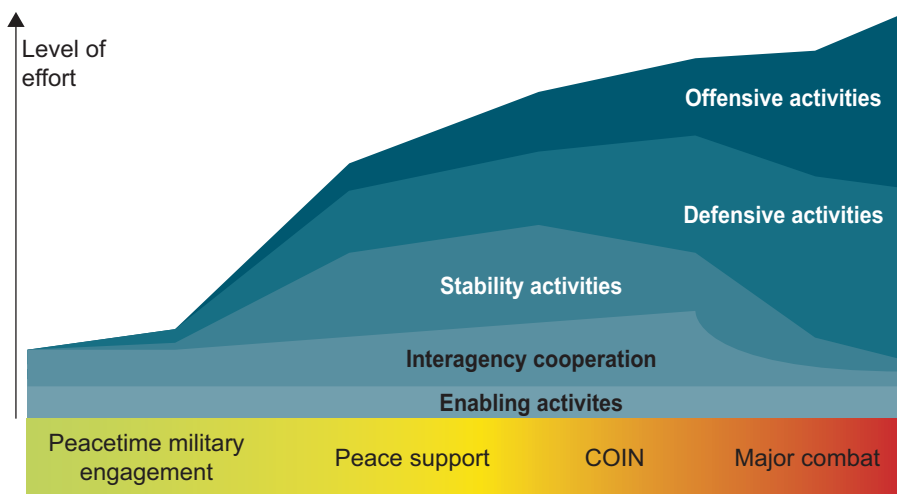


Figure 1–1: The range of tactical activities related to operation themes

Armour has made significant contributions to Australian deployments over the last 40 years, including in Vietnam, Somalia, Timor Leste, Iraq and Afghanistan.

This chapter describes the role, capabilities, principles of employment and limitations of armour, and the contribution of armour to land warfare.

[Annex A](#) contains current Australian A vehicle data (see [Table 1–1](#) and [Table 1–2](#)).

Role

Role of armour

The role of armour is to locate, identify and destroy or capture the enemy, by day or night, in combination with other arms, using fire and manoeuvre.

Role of the armoured cavalry regiment

The role of the armoured cavalry regiment (ACR) is to train, equip and deploy a battlegroup (BG) HQ and armoured combat teams (CTs) in accordance with raise, train, sustain procedures.

Role of tanks

The role of tanks is, in coordination with other arms, to close with and destroy the enemy using fire, manoeuvre and shock action.

Tanks provide Army the best protected land platform that is discriminatory, lethal and adds complexity to the enemy's predicament in close fighting.

Role of cavalry

The role of cavalry is to locate, dislocate and disrupt the enemy through the conduct of offensive, defensive and security actions.

Cavalry provides mounted reconnaissance to the combat brigade and ACR commander, in coordination with other arms and brigade reconnaissance assets.

Light cavalry. The role and tasks of light cavalry is the same as for cavalry, but are enabled through non-AFV platforms. Light cavalry are more likely to conduct security, stability and enabling activities in lower threat environments or in rear echelon areas. Light cavalry operate predominantly mounted in the conduct of their tasks using similar TTP to CRV-based cavalry units and are enabled by a range of protected and unprotected mobility platforms.

Cavalry scouts. The cavalry scout is an integrated and habitual element of the cavalry organisation. Scouts facilitate all dismounted reconnaissance and surveillance tasks, and limited offensive and defensive tasks. They provide intimate security to vehicles while on the move and at the halt, and enhance both endurance task coverage of the cavalry element. Scouts are capable of being employed independent of the vehicles for short durations and can be used to trigger vehicle reaction.

Role of armoured personnel carriers

The role of APCs is to provide an armoured mobility to dismounted combat forces as part of the combined arms team.

APCs provide the mounted infantry the mobility and protection to the objective, where they may dismount in relative safety and from where they can assault on foot. The APC squadron is designed to lift a single standard infantry battalion (ie, battalion HQ, three infantry companies and one support company).

Capabilities of armour

Throughout history, all armour has been based on the three key capabilities of firepower, mobility and protection, and the trading of one to increase another. In the 21st century, this combination has become a capability quintet through the addition of networked communications and sensors.

Firepower. Armoured vehicles mount a range of weapon types including large calibre quick-firing guns or automatic cannons, and light to heavy calibre machine guns. A variety of ammunition natures can be used according to the target type

and the mission. Individual moving or stationary targets can be engaged with pinpoint accuracy using direct fire, by day and night, from static or moving platforms.

Mobility. The crew utilises the speed and mobility of armour to close within weapon range without permitting effective engagement by the enemy. Successful manoeuvre by armour requires a sound understanding of vehicle capability, enemy tactics and capabilities, and the impact of terrain. Armour is highly mobile across country, although steep terrain and heavy vegetation will influence the rate of movement. Armoured mobility and speed enables the development of tempo, which is a key to success in battle.

Protection. Armour generates protection directly and indirectly. Figure 1–2 depicts how armour generates indirect protection through a series of protective measures.

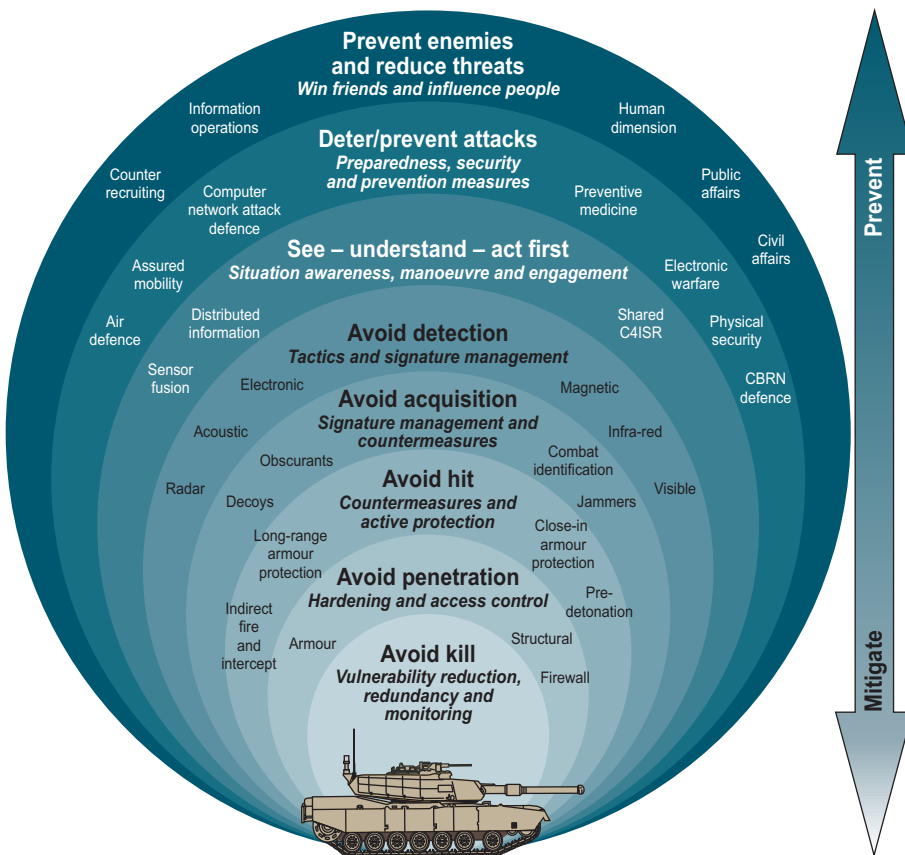


Figure 1–2: Armour protection

Protection is best described in the following terms:

- *Direct protection.* The armour of an AFV is designed to protect its occupants and weapons against small arms fire, artillery shell fragmentation and antipersonnel mines. This armoured protection enables the AFV to manoeuvre to some degree through indirect and some direct fire.
- *Indirect protection.* Protection is improved by the individual platform's capability for tactical mobility, which includes its ability to traverse a wide range of terrain and vegetation, its use of camouflage to mask the enemy's observation and its use of direct fire weapons. The suppressive fire of AFV armament, and the ability to concurrently move and shoot accurately, also enhances protection. Protection of armoured assets is also derived by grouping, both within its own sub-units and in grouping with other arms.

Networked communications. All armoured vehicles are equipped with multiple, secure radios and all crews are skilled in radio communications. In addition, the intra-vehicle communication system allows vehicles to transmit details of their location without the crew input. When combined with the digital battlefield management systems (BMSs) and other technology, the result is an information network which does the following:

- reduces the time required for battle procedure and the response to higher level orders thereby increasing flexibility and enabling synchronisation
- allows combat identification and enhanced situational awareness without crew input
- enables armour to optimise the other capabilities of firepower, mobility and protection.

While activities are significantly enhanced by electronic communications, armour is capable of operating in difficult electronic warfare environments using SOP and well-practiced drills.

Sensors. Sensors enable armour to gather information and engage targets in a variety of weather conditions and light levels. The use of target designation is a combat multiplier as it allows one platform to designate a target for other platforms, both ground and air, that may be in a better position to engage that target. APCs, CRVs and tanks have advanced sensor systems. Cavalry also has additional capabilities such as ground surveillance radar, mast-mounted thermal imager (TI), surveillance cameras and unattended ground sensors.

Principles of employment

The principles of employment of armour are:

- mission command
- combined arms

- sustainment
- manoeuvre space.

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, the mission, and the assets and resources to achieve that mission. Tempo in complex terrain demands decisive and orchestrated action. Mission command assists armoured commanders to make decisions where there is little time for reflection or for consultation with superiors. Orders to armour must detail the commander's intent for achieving the immediate mission and the way in which armour contributes to the overall plan. They will include a clear statement of tasks and purposes. *LWD 1, The Fundamentals of Land Power* contains more information on mission command.

Combined arms. Armour provides a valuable offensive and defensive capability, but with some limitations as described in the Limitations section. Combining armour with other combat arms can enhance the capabilities of armour and reduce the impact of its limitations.

Sustainment. Any deployed force requires sustainment. Armour uses large quantities of fuel, ammunition and spares. The logistics train must support continuous sustainment under combat conditions. Sustainment requirements for the force will be governed by a number of factors, such as the type of activity, the force being deployed, the terrain, the climactic conditions and enemy activity. If working as part of a CT or BG, armour must come with its own logistic support.

Manoeuvre space. Tanks, CRVs and APCs can move quickly and cover large distances in a short time. The cross-country mobility of the armoured vehicles allows them to range freely. Armoured weapons can be employed at significant ranges and they require room to manoeuvre into firing positions. When manoeuvring in the open, armoured vehicles will achieve dispersion while remaining within visual and weapon range. Support between armoured vehicles is maintained on the principle of half visual range to half weapon effective range; whichever is the least distance. The distance between vehicles in this situation could be up to 2 km for tanks due to their greater effective weapons range. Even in a relatively static direct fire role a tank will require more than 1 km of frontage in which to select their primary, secondary and alternate fire positions. Armoured forces must therefore be given room in which to manoeuvre and apply their offensive capabilities.

Limitations

Commanders and staff who plan to work with and employ armour need to understand the limitations of this force. Armour limitations include:

- vulnerability to air attack
- difficulty in holding ground

- ground and obstacles
- logistics.

Vulnerability to air attack. Vulnerability to air attack by precision air-delivered anti-armour weapons makes armour, particularly when concentrated, an attractive air target. A constant awareness of this threat must be emphasised and deployment drills developed to counter it. Specialist ground-based air defence (GBAD) elements should be deployed in support of armoured elements to enable freedom of manoeuvre in a hostile air environment.

Difficulty in holding ground. In open country, armour can deny ground to the enemy by fire. In close or broken country, or if ground is to be held or defended, dismounted forces will be required to protect the armoured vehicles from short-range anti-armour weapons.

Ground and obstacles. Steep or rugged terrain and very close country can limit the movement of armour. Natural and artificial obstacles, including minefields, may be a barrier to armour. Notwithstanding these difficulties, armour can achieve surprise by reaching apparently inaccessible places with or without engineer assistance. Armoured advice should be sought before declaring terrain impassable to armour.

Logistics. Armoured vehicles have a heavy reliance on fuel, ammunition and repair parts. The logistics chain must keep up with the armoured force, otherwise they risk overextending and culminating, becoming ineffective until they can be replenished.

Contribution to land warfare

The contemporary operating environment is characterised by a continuing diversity and diffusion, which is underpinned by evolving lethality; the diffusion of conflict and force manoeuvre in small groups; and the level of complexity. 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. Armour is critical to the success of deployments throughout the spectrum of conflict and across the range of military activities. Armour is one of the primary means with which a commander can gain information, and apply lethal and nonlethal force. Armour is able to patrol, gain information, provide precision fires, establish checkpoints and strong points, seize critical locations, assault enemy positions, and defend against attack. Armour can be re-rolled or re-tasked to provide humanitarian assistance (HA) disaster relief, and is able to interact with the local population to achieve information objectives.

Adaptive action. Adaptive action is an iterative process of forcing the enemy to respond, learning from those responses and changing behaviour accordingly. Adaptive action incorporates outputs from deliberate planning as the start point for

subsequent interaction with the operating environment. Armour is a valuable asset for stimulating a response from a known enemy. In a complex competitive learning environment, where friendly forces are fighting an adversary who can shelter below the discrimination threshold, armour is able to force that adversary out of hiding and survive the potentially lethal attacks that may result.

Range of military activities. Armour is able to operate throughout the range of military activities and transition between and across the lines of effort. For example, tanks may be used in an offensive tactical action to remove organised resistance, cavalry may provide protection and security to a threatened population through combat patrols, APCs may be used to transport vital stores to assist humanitarian efforts or to evacuate personnel from hazardous situations, and armoured crewmen can help to train local security forces. The inherent flexibility within armour allows one element to provide the secure environment in which other armoured elements support the different lines of effort.

Effects

The successful application of fighting power requires land forces to be proficient in the six combat functions. As an element of the land force within a joint, combined or coalition operation, armour contributes to operations through the effective application of its capabilities to achieve these effects. These combat functions are:

- know
- shape
- strike
- shield
- adapt
- sustain.

Know. To know is to possess the capacity to predict, detect, recognise and understand the strengths, vulnerabilities and opportunities available in the battlespace.

Tank and APC missions will not always be focused toward the 'know' combat function as that is not the optimal employment of the capability, but they may effectively contribute to these operations through the use of sensors in wide area reconnaissance tasks, or in fighting for information.

Cavalry missions are frequently focused toward the 'know' combat function being used to complete reconnaissance and surveillance tasks.

Shape. Strategic and operational shaping actions set the conditions for decisive action by enhancing the friendly force position while degrading the enemy's ability to respond.

Tanks and APCs are able to engage in close combat actions, shaping the enemy through physical and psychological shock. Tanks and APCs may also shape

through screening, reconnaissance, and attack by fire (ABF) and support by fire (SBF) tasks. At the tactical level, the tanks and APCs as part of the combined arms team are also able to conduct battlespace shaping actions through the seizure of critical points, the holding and denial of key and decisive terrain, and in the conduct of holding attacks and feints. Tanks and APCs grouped together have the capability to support the shaping actions of other force elements (FEs) in blocking, turning, fixing and disrupting threat forces.

Cavalry is able to engage in close combat actions, and may also shape through screening, guarding and conducting reconnaissance tasks. Cavalry also shapes the enemy by conducting counter-reconnaissance tasks, deception missions, raids, attacks and mobile defensive operations. Cavalry can also shape operations through the destruction, denial or delay of the enemy forces while avoiding decisive engagement. The combination of mounted and dismounted elements of cavalry fixes the enemy by the denial of freedom of movement across broad areas, even in complex terrain.

Strike. Striking is the timely application of tailored effects to destroy enemy forces.

Tanks remain one of the primary land FE with which the commander may strike threat forces with maximum physical and psychological shock effect. Such strikes could take the form of direct assault, counterattack, penetration and counterpenetration, raids, and the rapid pursuit of withdrawing enemy forces. The employment of tanks in other types of operations may also be used to gain significant psychological effects, demonstrating the ability to strike rather than the action itself.

APCs (with or without mounted troops) can be used in much the same way that tanks can be used to strike threat forces. They will often be grouped with tanks to achieve the same range of tasks.

Cavalry uses its inherent adaptability to seize fleeting opportunities; cavalry can destroy critical enemy elements and in doing so dislocate and disrupt the enemy in all phases of war. CRVs employed thoughtfully in a combined arms environment are able to effectively fix and destroy superior enemy forces.

Shield. Shielding protects friendly forces and infrastructure and is achieved by measures that include protection against physical or electronic attack and avoiding detection.

Tanks and APCs contribute to the shielding and protection of friendly forces and key infrastructure through:

- conducting ground reconnaissance
- forming part of screens
- providing guards and early warning for FEs
- participating in protective operations
- participating in the defence and denial of physical locations to enemy interdiction.

The cavalry contribute through effective counter-reconnaissance to deny the enemy freedom of action and information, enacting own force deception and undertaking security tasks. Cavalry's ability to regroup and redeploy rapidly without external support means that it has a disproportionately large shielding effect when employed thoughtfully. Cavalry is frequently tasked to protect own forces.

Adapt. Adapting describes the ability of a force to respond to a change in situation or task.

Tanks and APCs may effectively contribute to this function through their capability to rapidly transitioning from warfighting to military operations other than conventional war within the same battlespace. The tank or APC enables a rapid response in the complex warfighting environment to changing situations and conditions, such as in the defence for counterpenetration or counterattack tasks. Tanks and APCs also provide the supported commander with the enhanced situational awareness drawn from networked communications. Tank or APC FEs deployed with patrols, screens, guards and forward combined arms reconnaissance teams allow commanders to adapt plans to changing situations for the 'know' combat function.

The cavalry effectively contributes to this function through its unique capability to transition rapidly from one task to another, as well as providing any commander with situational awareness. The ability to adapt comes from the combination of combat power, networked communications, standard equipment, and the organisation that includes both mounted and dismounted troops. These characteristics allow any commander to use their assigned cavalry to seize opportunities through the rapid adaption of their plans to the emerging conditions in the battlespace.

Sustain. Sustainment is the provision of tailored logistic support to forces from deployment, through operations, to their redeployment.

The ACR Operations Support Squadron is designed to support the elements of the BG, but has some capacity to sustain additional personnel and similar items of principal equipment for attached combined arms team elements. Where items of principal equipment (eg, GBAD) are attached, the BG will also require specialist support from the parent unit.

The integral logistics capability (ie, the A1 echelon) of each squadron enables it to be self-sustaining for many missions. However, planning is essential due to the quantity of combat supplies and the level of technical equipment required to sustain and maintain tempo.

Annex:

A. [Armoured fighting vehicle data](#)

Annex A to Chapter 1

Armoured fighting vehicle data

Table 1–1: A vehicle tabulated data

Vehicle	Armament	Rounds carried	Crew + passenger	Bridge class (t)	Air portability		Fuel (L)	Vehicle range (km)	Organisation
					C130	C17			
APC (M113AS4-APC)	12.7 mm QCB MG	250 (ready) 2500 (stowed)	2 + 10	20	Yes	Yes	440	550	APC Sqn, Tank Sqn, Support Sqn
AM (M125AS4)	81 mm mortar 12.7 mm QCB MG	114 (mortar) 100 (ready) 900 (stowed)	2 + 3	20	Yes	Yes	440	550	APC Sqn
AF (M113AS4-AF)	12.7 mm QCB MG	100 (ready) 1000 (stowed)	2 + 3	20	Yes	Yes	440	550	APC Sqn, Tank Sqn, Support Sqn
AA (M113AS4-AA)	12.7 mm QCB MG	100 (ready) 800 (stowed)	2 + medic 2 litters or 1 litter with 3 passengers	20	Yes	Yes	440	550	APC Sqn, Tank Sqn, Support Sqn
ACV (M113AS4-ACV)	12.7 mm QCB MG	100 (ready) 600 (stowed)	2 + 3	20	Yes	Yes	440	550	APC Sqn, Tank Sqn, Support Sqn
ARVL (M806AS4)	12.7 mm QCB MG	100 (ready) 2000 (stowed)	2 + 2	20	Yes	Yes	340	450	APC Sqn, Tank Sqn, Support Sqn
ALV (M113AS4-ALV)	12.7 mm QCB MG	100 (ready) 1600 (stowed)	2 + 1	20	Yes	Yes	410	550	APC Sqn, Tank Sqn, Support Sqn
M1A1 AIM(D)	120 mm 7.62 mm MG 12.7 mm QCB MG	40 (main gun) 11 400 (7.62 mm) 1000 (12.7 mm)	4	70	No	Yes	1907	480	Tank Sqn
M88A2	12.7 mm QCB MG	1000 (stowed)	2 + 2	68	No	Yes	1563	500	Tank Sqn, Support Sqn
ASLAV type 1	2 x 7.62 mm 1 x 25 mm chain gun	1410 (7.62 mm) 210 (ready) 510 (stowed 25 mm)	3 + 2	13	Yes	Yes	260	660	Cavalry Sqn, RHQ

Vehicle	Armament	Rounds carried	Crew + passenger	Bridge class (t)	Air portability		Fuel (L)	Vehicle range (km)	Organisation
					C130	C17			
ASLAV type 2	12.7 mm QCB MG	100 (ready) 1600 (stowed)	PC: 2 + 9 ACV: 2 + 4 Surveillance: 2 + 3 Ambulance: 2 + medic 2 litters with 3 passengers	13	Yes	Yes	270	660	Cavalry Sqn, RHQ
ASLAV type 3 fitters, recovery	7.62 mm MG	235 (ready) 2350 (stowed)	Fitter: 2 + 3 Recovery: 2 + 2	13	Yes	Yes	270	660	Cavalry Sqn, Support Sqn

Table 1–2: Vehicle weapon characteristics

Vehicle	Weapon	Ammunition types	Maximum effective range (m)	Remarks
M1A1 AIM(D)	M256 smoothbore 120 mm MG coaxial 7.62 mm, MAG 58 MG flex 7.62 mm, MAG 58 on skate mount MG CWS 0.50 calibre, M48 QCB, on powered rotary platform	APFSDS-T HEAT MPAT 4B1T 4B1T 4B1T	4000 4000 1600 900 1500	M88A2 is armed with same CWS 12.7 mm QCB MG as M1A1 AIM(D)
ASLAV type 1	25 mm chain gun MG coaxial 7.62 mm, MAG 58 MG flex 7.62 mm, MAG 58	HEI-T MPSD-T APDS-T 4B1T 4B1T	2000 2000 2000 1000 1000	
ASLAV type 2/M113	12.7 mm QCB MG	4B1T AP Trace Incendiary	1000 N 1500 E	N – normal E – exceptional (under ideal conditions)
ASLAV type 3	MG flex 7.62 mm, MAG 58	4B1T	900	

Chapter 2

Armour organisation

Introduction

The regiment is armour's primary structure for raising, training and sustaining the armoured capability. In peacetime, armoured assets are grouped into ACRs, with a squadron each of CRVs, APCs and tanks. When deployed, the armoured capability is best task-organised in a combined arms force.

This chapter describes the units and sub-units, C2, staff, and levels and types of support that contribute to the armoured capability in the Australian Army.

Units and sub-units

Within armour, units are referred to as regiments, sub-units as squadrons and sub-sub-units as troops. The support squadron of an armoured unit contains all the CSS elements required to enable the regiment to operate.

Armoured units are structured, manned, equipped and trained primarily to provide HQ and sub-units for task-organised BG as a part of the combat manoeuvre force. A task-organised force consists of an appropriate unit HQ with subordinate sub-unit components grouped to meet the requirements of the task.

An ACR is found in each of the three combat brigades, with the light cavalry regiments found in the ARes brigades in 2nd Division.

Armoured cavalry regiment

An ACR consists of an RHQ, a cavalry squadron, an armoured mobility squadron, a tank squadron and a support squadron. Personnel in an ACR total approximately 590 and include specialist personnel from a variety of corps.

The primary equipment of the RHQ may be ASLAVs or MBTs dependant on the individual ACR structure. RHQ personnel total approximately 46, and break into two key manoeuvre elements:

- tactical HQ where the CO, RSM and attached BC are located
- main where the staff and any attached LOs are located.

The principal equipment of the cavalry squadron is the CRV and its variants. Other principal equipment items include surveillance radar, high frequency communications equipment and ground sensors. Personnel in a cavalry squadron total approximately 91. The cavalry squadron can deploy three six-vehicle (ie, four

type 1s, two type 2s) combat troops and one six-vehicle (ie, two type 1s, four type 2s surveillance) surveillance troop.

The primary equipment of the Armoured mobility squadron is the M113AS4 and its variants. Personnel in a lift squadron total approximately 254. The lift squadron can deploy three 20-vehicle combat troops capable of lifting an infantry company, and one support troop capable of lifting support elements integral to the battalion (mortars or direct fire support weapons) and attachments (joint fire teams and engineers).

The primary equipment of the tank squadron is the M1A1 AIM(D) Abrams MBT. Other principal equipment includes the M88A2 heavy recovery vehicle, the M113AS4 and the related variants for C2 and other tasks, and a significant refueling capacity based on TTFs¹. Personnel in a tank squadron total approximately 89. The tank squadron can deploy three four-vehicle tank troops.

The primary equipment of the support squadron is the B vehicle, augmented by support variants of each AFV type. Personnel in the support squadron total approximately 110.

Light cavalry regiment

Light cavalry regiment consists of an RHQ, two light cavalry squadrons and limited administrative sub-unit elements. A light cavalry regiment can deploy a total of four light cavalry troops.

The current primary equipment of the light cavalry unit is the protected mobility vehicle, or G-Wagon surveillance and reconnaissance vehicle, which provide the force a protected lift capability and communications equipment.

Personnel in a light cavalry regiment total approximately 231 and include limited specialist personnel from a variety of corps.

Command and control

Armour does not have any specialist or unique degrees of authority or command terminology. The standard degrees of authority are detailed in [ADDP 00.1, Command and Control](#). These apply to armour as follows:

- *Full command.* Full command gives full authority and responsibility to the superior officer to issue any orders to the armoured unit. It makes the superior officer responsible for every aspect of the employment and administration of armoured forces. Armoured units have significant CSS requirements that few other HQs will be able to provide under this status of command.
- *Operational command.* Operational command is the authority granted to a commander to assign missions or tasks to armour, to reassign armoured

1. Truck tanker fuel.

forces and to retain or delegate operational and/or tactical control as may be deemed necessary. It does not of itself include responsibility for administration or logistics but will usually do so. This is the highest degree of authority which can be assigned to the commander of a joint force and is usually used to initially commit armour to an operation or campaign.

- *Operational control.* Operational control gives a nominated commander the authority to direct the armoured forces assigned to achieve a specific mission within agreed limitations, usually related to function, time or location. The commander may delegate operational and tactical control to another commander, but does not have the authority to assign separate employment to components of the units or sub-units concerned. It does not include responsibility for administration or logistics. Operational control is the usual degree of authority used to assign an armoured sub-unit for a specific task or mission.
- *Tactical command.* Tactical command allows a commander to assign tasks to armoured units or sub-units under their command to accomplish the mission. The commander may delegate tactical control of the asset. This may be used to assign an armoured sub-unit for a limited task or phase of a mission.
- *Tactical control.* This status of command is rarely used for armoured units, except in defensive or protective activities to enable the clear command of movement in restricted spaces.
- *Technical control.* Technical control is not a degree of authority. The armoured commander retains technical control of their vehicles and equipment at all times. The commander acts on the advice of the technical staff to ensure the optimal balance between achieving the task, and the need to service and maintain equipment.

Staff

Each armoured unit provides an RHQ to enable a unit-sized BG to be commanded and controlled as a fighting unit. The responsibility for command of the BG rests with the CO, who exercises command through their squadron or sub-unit commanders (see [Figure 2-1](#)).

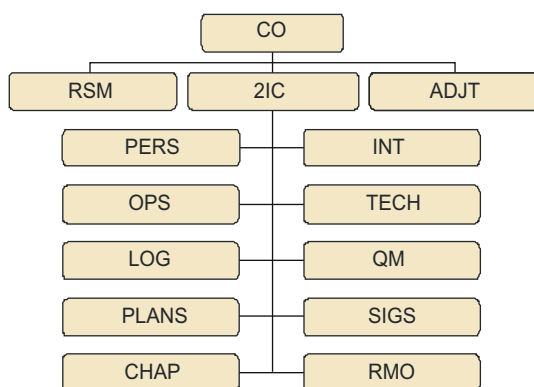


Figure 2–1: Staff of regimental headquarters

The BG plan is controlled by the unit staff from RHQ, coordinated by the OPSO. At squadron level, the squadron staff coordinates the plan. RHQ is the central element through which orders and information are passed. RHQ provides the CO with the staff and communications facilities required to command the unit in peace and a BG on deployment. The staff functions are required to accomplish the following:

- conduct daily tasks within a CO's tactical HQ
- command the BG; including logistic, technical and intelligence staff
- coordinate supporting units
- enable liaison at unit level and to the task force (TF) or formation HQ.

The coordinating staff is responsible for staff planning. The special staff are those non-organic staff habitually attached to coordinate external support. The personal staff supports the CO.

Each regiment has a designated regimental LO to represent the CO at formation or flanking unit HQ. Each regimental LO is responsible for keeping their HQ and other units to which they are attached fully informed. However, the regimental LOs may also convey or amplify the CO's orders at SHQ, and may also be required to be positioned at key coordination points or to assist in regrouping or other tactical functions (eg, with a covering force).

Armoured BGs will not routinely have a staff officer located on the TFs or formation HQ. TF and formation HQs must ensure that armoured units are advised when liaison staff are required to assist in planning or other tasks.

Levels and types of support

Armoured units are based on ACRs in peacetime but are employed in BGs and CTs when deployed. Armour 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 armoured capability are balanced to meet the needs of the task.

A BG is defined as a combined arms grouping task-organised for a specific mission based on a manoeuvre unit HQ. 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. The ACR is able to form a BG HQ and up to three CT HQs with integral support, but it may require specialist equipment, such as infantry, engineers or offensive support (OS). Armoured CTs may also be attached to a BG formed by another combat arm.

While any manoeuvre unit HQ can command other manoeuvre sub-units, the ability to communicate effectively with sub-units is a consideration. All armoured 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.

Chapter 3

Armour 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 and clear SOP; and well-developed tactics, techniques and procedures. Extensive use of the staff MAP and the individual MAP will in turn be supported by the combat MAP at lower levels.

There is no special planning process for armour. However, the timely involvement of armour advice in the MAP and armoured involvement in any combined arms planning team, are essential if armour is to fully realise its potential. The key to planning for armour is to ensure that all commanders fully understand their superiors' intent and are able to act within this intent.

This chapter details the FE options, C2, planning, information action effects, threats and coordination measures for the employment of armour.

Force element options

Armoured FE options for deployment range from the commitment of troop-sized elements to that of the entire land force armoured capability. The tank troop, cavalry troop and APC section, with appropriate C2 and CSS, are considered the base level of deployable capability. Single tanks, CRVs or APCs are never deployed for any reason due to the requirement for mutual support. The three basic deployable FEs within armour are:

- troop group
- squadron or CT
- regiment or BG.

Troop group

The smallest deployable armoured unit is a troop group. A troop group consists of the vehicles, equipment and the personnel needed to operate as part of a CT or BG and should not be committed to tasks at less than vehicle patrol/section sizes. Typically, a troop might be assigned operational control to a CT.

A troop group deployed independently of its parent sub-unit must have a specialist repair and recovery vehicle and personnel included. Even with this support, there are limitations to how long such a group can operate without regimental support.

Squadron or combat team

An armoured squadron consists of the vehicles, equipment and personnel needed to form a CT or as part of a BG or TF. To deploy independently, the logistic elements of the squadron will need to be supplemented by its parent regiment. There will still be limitations to how long such a group can operate without regimental support. Typically, a squadron might be assigned operational control to a manoeuvre BG.

Regiment or battlegroup

An ACR consists of the vehicles, equipment and personnel needed to form a BG. The deployment of a regiment provides a BG HQ, three armoured CTs and the necessary logistics to support the regiment. CSS must be available to all elements of the regiment, regardless of their task organisation. A regiment, possibly a task-organised composite regiment, might be assigned under command to a joint TF.

As explained in [Chapter 2](#), armour benefits from being combined with other arms so that the limitations of one arm can be balanced or negated by the capabilities of the other arms. For fast moving activities involving large distances, where seizing and holding ground are not important, armour and aviation provide an excellent mix of speed and mobility. For activities which require areas to be cleared or involve seizing and holding ground, armour and infantry mounted in APCs are a good combination. The combination of armour, aviation and APC-mounted infantry into a single BG creates a powerful and flexible organisation that can be assigned almost any task, but it also creates a demanding logistic support situation. When combining multiple sub-units into a single organisation, C2 and span of command are key considerations.

Command and control

An effective C2 system for armour depends on the following:

- complementary groupings
- control measures
- location of commanders
- communications
- accurate and timely intelligence
- SOP
- well-rehearsed battle procedures.

Groupings

Armour is task-organised by grouping into combined arms BGs and CTs. As these groupings involve other combat, combat support and CSS elements, C2 must be clear and simple. Complicated groupings take time to enact and are difficult to coordinate in the chaos of battle. Accordingly, groupings must be kept simple and regrouping must be minimised. Wherever possible, affiliations built in training should be maintained on deployment.

Regrouping. Regrouping reduces tempo, complicates the supporting plan and puts the organisation temporarily into an unbalanced state. It is not undertaken lightly and requires all units involved to be given clear and simple regrouping orders. As groupings must be related to the task, regrouping should only occur when the primary task has changed.

Control measures

Armoured movement on the battlefield is rapid and must be carefully controlled to maximise shock action, and minimise confusion or disorganisation. Fratricide is also a risk that must be avoided. There are numerous control measures designed to coordinate movement; the key of which are boundaries, phase lines, report lines, feature numbers and timings. Control measures must be issued in sufficient quantity to be adequate for the activity without being overly restrictive.

Location of commanders

The BG or CT commander must make the choice of exercising control from the CP or from their own fighting vehicle. It is easier to process imagery and data in the CP vehicle because of the staff and facilities designed to assist in C2 activities. However, it is difficult to lead a force or to fully understand or influence the armoured battle from a CP. The commander's own fighting vehicle enables them to influence the battle personally and directly when the situation demands. The choice of location will depend on the nature of the activity, and the type and amount of information to be processed. Commanders should be with their sub-units as often as possible, particularly during critical periods when their presence could affect the outcome of an activity.

Communications

The following are the communications facilities in armoured units:

- BMS
- radio
- line (in static locations)
- telephone (satellite communications)
- LOs.

Intelligence

Timely accurate intelligence is essential for effective C2; however, commanders will rarely have all the information they require. The norm in complex warfighting will be for land forces to fight for and not necessarily with information. As a result, armoured commanders must use the adaption cycle (ie, act–sense–decide–adapt) to gain the information they need.

Standard operating procedures

Well-practiced and widely understood SOP are essential for both coordination and speed. BG HQ should provide armoured sub-units with copies of their SOP as soon as practical after regrouping.

Battle procedures

The purpose of battle procedure is to ensure that a BG or CT deploys and prepares for battle quickly and efficiently. It is the process by which an armoured commander directs reconnaissance, makes plans, issues orders and prepares the force for battle.

Some armoured elements will be required to deploy earlier than the remainder of the unit or formation. Well-practiced battle procedures must be employed so that a minimum of time is lost before commencing the task. Armoured regimental and squadron commanders should be released by supported commanders, as early as possible, to maximise time for reconnaissance and other preparations.

Armour must always be given a notice-to-move time which allows for battle procedure. This enables the vital routine servicing and rest to occur as a part of the cycle of battle, and for the BG or CT to maintain tempo.

Planning

Planning factors

The MAP, used correctly, will ensure that all the necessary planning factors for armour are given due consideration. During the planning process advice must be provided by armoured personnel to avoid inappropriate employment.

Some planning factors that affect armour include:

- audacity
- concentration
- logistics and servicing
- vulnerability to air attack
- difficulty holding ground
- ground and obstacles
- noise

- reserved areas
- use of infrastructure.

Audacity. Armour planning must be bold and aggressive. It is only when the quintet of firepower, mobility, protection, networked communications and sensors are employed aggressively that armour realises its full potential. To do this requires bold plans and the ability to identify opportunities and measure risks. Armour must be used aggressively in defensive as well as offensive actions. It cannot be tied down by plans that require armoured vehicles to fight from fixed, static positions.

Concentration. Every opportunity must be taken to concentrate the firepower of armour. Planning will emphasise dispersion until the critical moment.

Logistics and servicing. Armour needs to consider the requirement for ammunition, fuel and spare parts as a significant issue. The bulk and weight of these items will influence resupply. An indication of requirements is given in [LWP-G 0-5-1, Staff Officers Guide](#). Armour also requires regular servicing of approximately 24 hours every 72 hours. Commanders at all levels must plan time for replenishment and servicing based on armour's advice to ensure the availability of armour for combat.

Vulnerability to air attack. Specialist GBAD elements should be deployed with all armoured elements to enable freedom of manoeuvre in a hostile air environment.

Difficulty holding ground. In close or broken country or if ground is to be held or defended, dismounted troops will be required to provide close protection to the armour.

Ground and obstacles. Steep or very close country and difficult terrain may limit the movement of armour. Armoured advice must be sought before declaring terrain impassable to armour.

Noise. Noise can prejudice surprise but a considered deception plan will reduce this limitation. The resonance effect of a number of armoured platforms moving makes estimating numbers and direction difficult.

Reserved areas. Armour requires space to disperse and to conduct maintenance and replenishment. The amount of space depends on many variables including the size and type of unit, the threat, the nature of the terrain and the vegetation. Armoured advice must be sought before allocating areas for administrative activities.

Use of infrastructure. The following infrastructure considerations will be taken into account:

- **Roads.** All forms of armour move most quickly on roads however roads are often the most dangerous route. Planning must balance tactical risk, the need for speed, and the potential damage that multiple AFV movements may cause to roads.

- *Bridges.* Not all bridges will support the weight of an AFV. Planning must ensure that expedient bridging or crossing points are available to armour, particularly on administrative marches.
- *Hard ground.* Armour requires hard ground for maintenance.
- *Rail, port and airfield.* While tanks and APCs can self-deploy anywhere by land, travel over long distances is best accomplished by rail, sea or air. Armour is deployable by air. When using rail transport tanks require specific railcars but light armour can travel on standard rolling stock. Armour can disembark from naval landing assets.

Information actions

Information actions consist of the following:

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

Influence actions. Influence has the primary purpose of changing the perceptions, will, attitudes and behaviour of target audiences both enemy and civilian. Relevant tools include military public affairs, civil–military cooperation and psychological operations. The majority of armoured activities are also influence actions. In the offensive, armour will force the enemy to either fight or run. Armour can establish and man checkpoints to provide protection to those on and behind the checkpoint, and be a serious threat to those seeking to do damage. The role armour plays in defeating armed aggression plays a major part in the security of protected populations.

Counter-command actions. 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. Activities include physical attack, deception, electronic attack and computer network attack. Armoured reconnaissance and surveillance missions seek to gain information, and this may be with or without the knowledge of the target group. Armour is also ideally suited to the physical attack role. The primary contribution of armour to counter-command actions is generally active rather than passive. Deception contributes to counter-command actions. Armoured units have a significant heat, noise, electronic and track signature which assists the enemy to detect armour; which means that specific steps must be taken to reduce the signatures, and increases the importance of deception measures. Every plan involving the use of armour must involve both a signature reduction plan and a deception plan.

Command and information protection actions. Command and information protection is aimed at protecting our own commanders, and the information systems and information on which they depend. Relevant tools include electronic protection, computer network defence and communications security. Armoured

forces maintain standard information protection measures for communications systems and will, when necessary, fight to protect information that they have obtained through tasking. Armoured units also fight for information.

Threats

Armour has always been concerned with anti-armour mines and anti-armour weaponry. Technological advances such as spaced armour, advanced hull shapes, improved detectors, and the use of active and passive countermeasures, can increase armoured survivability against these threats. Complex warfighting introduces an expanded range of threats. The availability of military off-the-shelf anti-armoured weapons such as rocket-propelled grenades introduces the need for protective features such as bar armour. IEDs are becoming more prevalent and deadly. As this threat has evolved, so too have the tactics to counter it. Procedural measures such as changing routes and timetables regularly, conducting detailed route reconnaissance, using an advance party for convoys, providing an unmanned aerial vehicle overwatch for convoys, and using electronic warfare intervention are all examples of the flexibility required in such situations. Suicide bombers, both personnel and vehicles, are another common threat for which tactics are continually being developed and adapted to counter.

Coordination measures

The coordination measures for the employment of armoured forces are determined during the joint military appreciation process (JMAP) in consultation with armoured staff. Armoured units must coordinate their patrol and reconnaissance activities with other formations and agencies. Coordination measures that may be applicable in a range of situations include:

- liaison
- boundary clearances
- intelligence, surveillance and reconnaissance
- passage of lines
- potential locations of illegal or hostile activity.

Liaison. Armoured units will establish liaison procedures with community representatives whenever based in an area for a prolonged period. Local communities must understand how to avoid being accidentally engaged by armour and armour needs to ensure that it works in coordination with civilian communities. Armoured units liaise with major participating HQ, ADF forces, and other entities and agencies in the preparatory phase of any planned offensive action. They participate in activity planning and provide their experience and knowledge to

assist in the preparation of the intelligence, surveillance and reconnaissance plans.

Boundary clearances. Standard procedures exist for boundary clearance for all units entering, transiting, operating in and exiting an armoured unit tactical area of responsibility (TAOR). Armoured planning staff must undertake liaison at an early stage of the JMAP with higher HQ planning staff to determine the likely boundaries that require coordination.

Intelligence, surveillance and reconnaissance. Armoured unit planning staff are required to coordinate their intelligence, surveillance and reconnaissance plan with higher HQ and other habitual affiliated agencies.

Passage of lines. Armoured units operate within the TAOR of other units and sometimes across more than one TAOR. The coordination of routes, boundaries, LOs and plans must occur at the earliest possible stage during the JMAP.

Potential locations of illegal or hostile activity. In situations where armoured forces have an asymmetric advantage, they can expect an increased range of non-linear threats. This will require armoured units to develop an intimate knowledge of their TAOR in order to identify potential locations for illegal or hostile activity that can be targeted or avoided. Control measures are necessary to prevent the compromise of reconnaissance teams and ambushes.

Chapter 4

Armour in offensive activities

Introduction

The offensive is decisive in war. For armour, bold manoeuvre, shock action, and maintaining tempo are the keys to success. In offensive activities, armour's ability to manoeuvre rapidly and engage targets accurately on the move makes it essential in the combined arms team.

There are three main types of offensive activities as follows:

- advance
- attack
- pursuit.

The basic considerations for each action are explained in [LWD 3-0-3, Formation Tactics](#).

This chapter describes the employment of armour in offensive activities. It will detail the concept of offensive manoeuvre; and the various offensive activities including the advance, the attack, the pursuit and other offensive activities.

Advance

The advance is characterised by aggressive manoeuvre which is designed to gain and retain the initiative. Armour plays a crucial role in the advance where tempo is imperative.

A superior tempo keeps the enemy off balance. Armour achieves tempo through rapid transition between tasks, high speed movement and by destroying enemy forces. The commander of an advancing force must continually balance the conflicting requirements of frontage, speed, degree of risk, depth and availability of reserves. Within the ACR, the only integral breaching capability comes from the mine ploughs within the tank squadron. This capability will need to be brought forward from the echelon early in order to maintain tempo.

Types of advance

There are two types of advance as follows:

- advance to contact
- advance in contact.

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. The advancing commander may not have sufficient information on enemy strengths and intentions to plan subsequent deployment groupings, and thus, the initial grouping should be balanced to enable a range of options to be considered.

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. The advancing commander should have more precise information on the enemy's deployment and should be in a position to commence planning initial attacks. In this case, the combat manoeuvre elements could be grouped to advance in contact and attack the first objectives. Alternatively, the commander may decide to outflank or envelop the enemy and seize less well-protected objectives in depth.

Tanks in the advance

Tanks will always be at a premium for all tasks in the advance. Correct grouping and order of march are critical if the advancing force is to have the balance required to achieve tempo. Tanks can be used in the following roles:

- *Advance guard.* Tanks with the lead element of the advance guard, the vanguard, give it the firepower to destroy minor opposition and the mobility to bypass or outmanoeuvre stronger enemy forces. More tanks allotted to the main guard of the advance guard will permit the rapid passage through of a new vanguard when the leading elements are committed. If necessary, tanks can continue in the vanguard while other forces are rotated, but this will quickly lead to the fatigue of the vanguard.
- *Main body.* The main body contains the greater part of the formation's combat strength. Tanks are allotted to the main body to provide the fighting power and shock action necessary to destroy the enemy by assault or ABF.
- *Flank and rear guards.* Tanks are unlikely to be employed in this role; however, consideration must be given to an echelon's vulnerability especially during resupply.

Armoured personnel carriers in the advance

APCs will contain mounted infantry and will often be used in support of tanks in the following three roles:

- *Advance guard.* Mounted infantry with APCs will be grouped with tanks and will be employed to consolidate the success they achieve.
- *Main body.* This will be where the majority of the combat power of the advancing formation resides. Most of this force will be kept for use in subsequent attacks, leaving the destruction of minor opposition to the advance guard.

- *Flank and rear guards.* APCs with mounted infantry may be used as flank guards, specifically anti-armour forces. Rear guards need to be able to protect echelons to the rear.

APC with reconnaissance platoons can be used for the conduct of close reconnaissance for the main body's axis of advance.

Cavalry in the advance

Cavalry is well suited to flank security tasks, and to screening ahead of the advance guard.

The advance to contact ends when the cavalry force reaches an assigned objective, a designated objective or when contact is gained. A cavalry force may then perform a sector search, or it may advance in contact and attempt to defeat the enemy force within its capabilities. The task organisation of the cavalry force will determine the size of the enemy force that can be defeated.

Should the enemy prove too strong, the cavalry force may picket the location until a larger force can deal with it. The cavalry force may be permitted to bypass enemy forces to maintain momentum. Bypass may be necessary if contact is lost with a moving enemy main force and the enemy security forces are blocking the friendly advance.

Light cavalry. Light cavalry can contribute to the advance through the following:

- undertaking area/sector reconnaissance to obtain topographical information (eg, roads and bridges, river crossings, and defiles) and marking preferred advance routes
- conducting mounted reconnaissance to locate enemy positions and enemy security elements forward of the advance guard
- reconnoitring selected areas of operations/areas of interest to either flank of the axis of advance
- conducting mounted reconnaissance to identify specific areas which may be occupied by the enemy.

Command and control

Mission command is paramount for the employment of armour in the advance. Armour is able to change axes quickly and move cross-country to maintain tempo. Commanders at all levels must understand the intent and push to build tempo.

Control measures in the advance must enable manoeuvre without stifling initiative. Armour requires room to manoeuvre during the advance. Narrow corridors will restrict the ability to manoeuvre.

Tempo

Outflanking and bypassing. Armour is suited to rapid outflanking and bypassing, particularly in the covering force and advance guard. Armour's networked communication enables handover without collocation. The aim of bypassing is to

outflank the enemy, picket the location and then handover responsibility for the bypassed position to the advance guard. Outflanking or bypass forces should be armour-heavy to cater for enemy reserves and counterattacks. The armoured force should not be allocated piecemeal to different activities so that the size of individual elements is vulnerable or ineffective. This is commonly referred to as 'penny packeting'.

Road or cross-country movement. The basic factors to be considered when deciding whether to move cross-country are as follows:

- the tempo needed
- the bypass policy and whether a cleared route is required
- the 'going' of the cross-country in relation to the rate of advance required
- the opportunities for finding weaknesses and gaps, and outflanking the enemy by using cross-country movement and minor tracks
- the impact on the following forces' B vehicles of the preceding AFV movement.

It will be necessary to continue the advance 24 hours a day in order to maintain and build tempo. Armour can advance at night, particularly if there are sufficient resources to rotate through a 24-hour cycle. In this case, a proportion of the armour rests and replenishes by day in preparation for night activities. If there is insufficient armour, the commander must consider the advantages of advancing continuously by day and night against the need for crew rest and vehicle repair, resupply and maintenance. Movement along roads and tracks in exchange for speed and control may sacrifice security. Cross-country movement may present considerable navigation and control problems by night.

The technology suites of Australian armoured vehicles provide excellent ability to fight at night. Against some enemy forces, the opportunities at night in the advance may be increased compared to daytime movements. However, commanders must balance the opportunities and the security and tempo gained from continuous action, against the limitations of operating at night including:

- slower battle procedure
- difficult situational awareness
- reduced speed
- the likelihood of increased vehicle casualties if moving cross-country.

Combat service support

As tempo must be maintained in the advance, CSS planning must be detailed and may include reserves of ammunition; POL; and repair and recovery assets as well as medical resources to be used to exploit success or to mitigate against unforeseen contingencies.

All vehicles in the armour advance should commence with a full load of fuel and ammunition. If an approach march precedes the actual advance, replenishment must be conducted prior to the troops crossing the line of departure.

The balance between the need for ammunition and POL produces a constant tonnage requirement. When ammunition expenditure is high, POL requirements will often be low. The rate of advance of the force must not be slowed by replenishment. If necessary, commanders should arrange for depth elements to be replenished and move forward to take over the lead.

Replenishment and casevac of the covering force is a difficult task. Use of air assets must be considered, dependent on the air and GBAD threat.

Aggressive movement in the face of the enemy over rough terrain will substantially increase the need for repair capabilities. Individual vehicles may need to fend for themselves until administrative support can reach them in the advance. Armoured units will have specific SOP for this.

Attack

Success in the attack requires physical aggression and concentration of force. Armour should be used in the attack whenever available. Shock action and overwhelming force at the point of contact must be achieved for any assault.

Armour in the attack may undertake one of three roles: assault, ABF or SBF. In most BG-level attacks there is a balance between the following three types of attacks:

- *Assault.* The assault is physically driven onto or into the objective.
- *Attack by fire.* An ABF is direct fire employed to destroy the enemy from a distance, normally used when the mission does not dictate or support 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.* SBF differs from ABF in that it supports the assaulting force. The force providing SBF may provide suppressing fire or simply overwatch, but does not attempt to manoeuvre to capture enemy forces or terrain itself.

Types of attack

The two types of attack are as follows:

- quick
- deliberate.

For armoured units there is little difference between the quick and deliberate attack, other than more time for battle procedure and reconnaissance. For all armoured units, the quick attack is launched as an SOP. In the quick attack, preparation time is sacrificed for speed. The attacking force seeks to take

advantage of the enemy's lack of preparedness in order to maintain tempo and seize the initiative. The minimum time necessary is devoted to preparation and planning. The forces used for the attack are taken from those that are immediately available. Maximum use is made of bold action, surprise and speed to achieve success. If the attack is lost or tempo slows, a deliberate attack may become necessary. The quick attack is frequently used during the advance and pursuit.

In any quick attack, a commander will have limited information on which to base their plan, and the retention of a strong reserve is required. At CT level a troop will be designated. At BG level a CT will be designated.

Tanks in deliberate attacks

When the commander knows the objectives and approaches to be used, a decision is made as to what troops are necessary for each objective. To take full advantage of their fighting power, tanks should be concentrated not distributed. Concentration of force is essential in the assault.

Tanks in the assault determine the tempo of the fight-through and fight to destroy the enemy; in doing so they secure and hold an objective. This may ultimately be achieved using hand-to-hand combat by dismounted infantry. The assault force moves at a pace that derives maximum benefit from shock action, which is generated by a combination of direct fire and intimate fire support.

It may be necessary to phase the attack to ensure that there are sufficient forces to secure each objective. The tank commander may need to rotate troops between SBF and assault roles. If, due to the nature of the ground or presence of obstacles, it is impossible for tanks to move forward then dismounted infantry must assault without the close physical presence of tanks. The range and accuracy of the tank gun will allow fire support to be given from hull-down positions from the rear or to the flank of the assault group.

Tanks are vulnerable during reorganisation. Reorganisation should be conducted near the objective. It should not occur on the objective. Battle replenishment for tank main armament ammunition must be a part of the exploitation. The replenishment of the size and quantity of ammunitions needed requires coordination at all levels.

In the exploitation, tanks need to be available to reinforce the cavalry's success. Tanks moving at speed through enemy rear areas can cause havoc and dislocation.

Armoured personnel carriers in deliberate attacks

Infantry mounted in APCs will be used in the assault; in conjunction with tanks. The tanks will protect the APCs and provide intimate fire support. The infantry dismounts and commences the fight-through quickly to take advantage of shock action. The fight-through involves close cooperation between armour and infantry, particularly at the junior commander level. Infantry depend on armour to destroy or neutralise those targets which interfere with the ground assault. Armour

depends on infantry to suppress threats to armour. Well-practiced infantry and armour cooperation is essential.

If an assault is entirely dismounted, APCs can be used as an SBF or remain rearward in a hide.

Cavalry in deliberate attacks

In the preparatory stage of a deliberate attack, cavalry will locate and conduct detailed reconnaissance and fix the enemy. Locating enemy reserves and intended routes will be a fundamental task as will security for the force.

Cavalry is capable of quick attacks, including assault and ABF. However, at formation level, cavalry should not be employed in either capacity. The ASLAV does not provide sufficient protection and there are higher priority tasks including providing flank security and preparing for exploitation.

Exploitation is a prime task for cavalry, as they can move quickly and in sufficient force to ensure that the enemy is kept off balance. Bold use of cavalry in this stage is crucial to capitalise on the risks and losses of any deliberate assault.

Light cavalry in deliberate attacks. Light cavalry can contribute to deliberate attacks through the following:

- manning observation posts (OPs) to observe enemy positions prior to the attack
- undertaking reconnaissance tasks to provide specific information on the enemy
- marking, guiding and assisting with the security of the forming-up point
- providing battlefield commentary on the progress of the attack from OPs/hides or vantage points using surveillance equipment and BMS
- providing patrols to report on enemy activity during the attack from positions to the enemy's flank or rear.

Command and control

For armour, the difference between quick and deliberate attacks is time. The same sequence and groupings are required but in deliberate attacks, there is more time for battle procedure including reconnaissance. SOP and good radiotelephone procedure enables the dissemination of radio orders to all personnel, including to mechanised infantry, concurrently.

Particular thought must be given to the limit of exploitation. Arbitrary lines should not restrict opportunities for exploitation.

Combat service support

Ammunition and fuel are key combat supplies. Battle replenishment must be well planned and conducted in consultation with echelon elements. Reorganisation must be sufficient to enable offensive action to continue without jeopardising tempo or opportunity.

The recovery of vehicle casualties needs to be coordinated and repair prioritised. Planning for the reorganisation phase must be thorough in order to maintain tempo.

Pursuit

The pursuit and the advance to contact are similar in the tactical handling and grouping, but differ fundamentally in the enemy situation. In the advance to contact, the enemy will be implementing a coordinated and well-considered plan, with troops of high morale. However, the pursuit follows the defeat of an enemy whose degree of cohesive resistance and morale has been reduced considerably. The commander in the pursuit can take greater risks. In execution, a pursuit can be either direct or parallel.

Tanks in the pursuit. Tanks will be required in the pursuit to drive in the enemy's rearguards, generate fear and maintain the momentum. The ability of tanks to fight and move concurrently makes them uniquely suited for this task. A force required for parallel pursuit (eg, on an alternate axis) will require a greater number of tanks.

A force required for parallel pursuit (eg, on the alternate axis) will require a greater number of tanks.

Armoured personnel carriers in the pursuit. APCs with mounted infantry, grouped with tanks, should be used in the pursuing and cut-off forces. The pursuit should be conducted with minimal regrouping of the advancing force in order to minimise reaction time and exploit the withdrawing enemy.

Cavalry in the pursuit. In the pursuit, cavalry will exploit success. Cavalry is well suited to exploit the opportunities gained from offensive activities. In the pursuit, cavalry forces will rapidly follow the withdrawing enemy on a number of axes, continuing to harass and shape the enemy for further offensive actions.

Combat service support for the pursuit. CSS for armour in the pursuit is similar to the advance. However, the tactics of the pursuing and cut-off forces may require allocating dedicated logistic support units under command. Maximum consideration should be given to alternative methods of resupply; for example, using air to resupply POL and ammunition, and for casevac. The location of depth objectives is influenced by the logistic system's 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. Extended lines of communication, the rate of advance and poor communications often exacerbate CSS procedures in the pursuit.

Tactical techniques

Offensive tactical techniques which armour employs include:

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

Airborne

Armour does not undertake airborne activities, but may provide the following contribution:

- *Preparatory phase.* Armour may contribute to the preparatory phase through its normal information gathering or specified tasking. Cavalry patrols can assist in the preparation of forces and may also be used to augment or assist any pathfinders that are deployed in advance of the landing.
- *Air landing information.* Armour may deploy patrols to those sections of the TAOR where airborne landings are to be conducted to assist the force with the provision of accurate information on airfields and the marking of air landing grounds, drop points, drop zones, landing points and landing zones, local conditions, and military geographic information. Additionally armour can be used to secure the landing zones and provide a reaction force to support light elements as they establish. While pathfinders may also be deployed for this purpose, cavalry patrols with local knowledge are ideal for augmenting or assisting these 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 planning. Armoured planning staff undertake liaison at an

early stage with the airborne forces commander or with the joint TF HQ controlling the activity.

Ambush

Armour's ability to concentrate fire is well suited to ambush.

Although discussed here as offensive action, armour conducts ambushes in all types of activities. Ambush is a common offensive technique in defensive or protective activities. The usual technique for an armoured ambush is an ABF, and it should be combined with aviation and OS to maximise results.

Cavalry, with cavalry scouts, can conduct ambushes without infantry support. Usually, tanks and APCs will require infantry support.

Armour is capable of both quick and deliberate ambushes, using terrain to provide cover and concealment. Protection from observation and surveillance is essential in any ambush. The vehicles must be hidden, routes must be camouflaged and concealed from the air, and any enemy night fighting equipment and electronic detection devices considered.

In any ambush, swift movement from the ambush site ensures that the participating vehicles are not subjected to retaliatory air or OS fire. Routes in and out must be carefully planned and camouflaged.

Amphibious

The armoured contribution to amphibious operations includes:

- *Preparatory phase.* Cavalry may contribute through its normal information gathering or specified tasking to the preparatory phase of amphibious assault. This will include input to planning for the amphibious assault force.
- *Beach and coastal information and reconnaissance.* Cavalry forces may provide beach and coastal reconnaissance information, and early warning of enemy activities and locations in those areas where amphibious lodgements may be planned.
- *Guides.* Cavalry may provide guides for beach landing zones.
- *Assault force.* Tanks and APCs may be employed in the assault force. The availability of landing craft and the suitability of the beach for disembarkation will be key determinants.
- *Disruption.* Armoured elements may be used to disrupt enemy forces during amphibious operations.

Attack by fire

ABF is generally a tank task due to the longer range and heavier weight of fire, but this does not prevent cavalry or APCs from contributing. The ABF may be conducted with armed reconnaissance helicopter (ARH) support. The CT or BG commander will need to provide flank and rear security to those elements providing the direct fire.

Cordon

The force conducting the cordon may be armoured or mounted 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 will usually comprise dismounted or infantry mounted in APCs, possibly supported by cavalry.
- *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 OPs. Tanks, cavalry and APCs can contribute to the outer cordon, supported by aviation. Both tanks and cavalry have the sensors to detect movement through the cordon and the firepower to defeat it. Tanks could anchor the VCPs and strong points, while cavalry or APC patrols could cover the gaps in the outer ring.
- *Traffic control posts.* Traffic control posts (TCPs) should be joint teams with local police/law enforcement bodies. Armour sited at a TCP can provide immediate firepower and acts as a strong deterrent.
- *Reserve(s).* The reserve(s) are ideally mobile either in the form of armour or mounted infantry.
- *Flank security.* Flank security is formed on an 'as required' basis but is another task that is well suited to cavalry or APCs.

Corridor thrust

Armour may contribute to a corridor thrust as part of one of two main forces, the thrust force and the security and support force. They are as follows:

- *Thrust force.* The thrust force consists of:
 - enabling force
 - overwatch force – cavalry would be well suited to contribute to the overwatch force, possibly operating to the flanks
 - assault force – armour would be well suited to contribute to the assault force, with its armament able to cover along the axis and out to the flanks.
- *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. This task is better suited to infantry mounted in APCs.

Coup de main

Coup de main activities may be achieved with either airborne or ground forces. Tanks would provide the shock action and firepower to a ground thrust. Airborne forces will require rapid reinforcement by ground forces in order to provide weight

of fire and longevity. Tanks and APCs would be a key component of any force to break through and link-up. Cavalry would provide security in either case. Whether the coup de main is accomplished by air or land forces, the use of all forms of armour is essential to its success.

In a coup de main, cavalry provides the reconnaissance, flank security and rear security necessary for the tanks and infantry mounted in APCs to arrive at the objective and either seize it or reinforce a force inserted by airmobile. Holding the objective may require considerable fighting power and the physical holding of ground. Accordingly, the force must be as large as possible and capable of moving rapidly to the objective.

Diversionsary attack

Armour can conduct diversionsary attacks, as either an ABF or SBF. 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 armour in the diversion can add to the realism and coincidentally achieve attrition of the enemy force.

Raid

Operating deep often exposes those high-value targets which are deliberately kept to the rear of the enemy's forward line of own troops; engineering assets, C2 nodes, CSS and so on, provide perfect raid opportunities. When timed to coincide with a broader assault elsewhere, raids provide multiple dilemma for enemy forces and significant disruption. With their inherent mobility and speed coupled with intensive firepower, the cavalry squadron is ideally suited to conduct raids. For this type of mission, cavalry is usually supported by combat aviation. It is possible that tanks and APCs will also perform raids.

Raids require significant planning and should be conducted over as short a distance as possible, and in circumstances where there is sufficient knowledge of the enemy. The raid requires detailed preparation, including rehearsals, and the flawless synchronisation of all forces is essential. Failure could entail the destruction in detail of the raiding force. A lightly equipped raiding force, operating at long distances from its home base with limited support, is not capable of a sustained engagement with conventional manoeuvre forces. The inclusion of armour in a raiding force will increase its ability to withstand engagements.

Reconnaissance in force

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 mounted infantry combined arms teams together with ARHs are ideal for this purpose. Cavalry may either support the ground units conducting the reconnaissance in force or may operate independently by conducting fighting patrols. Tanks will be central to the reconnaissance in force and will provide much of the firepower.

Search

Search techniques 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 airmobile forces as a part of reconnaissance and surveillance tasks. This form of search would normally be conducted by cavalry, either with or without support from other arms. However, a combined arms grouping with aviation would be most appropriate. The second, and lowest level of search, is undertaken by foot 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.

Support by fire

SBF is generally provided by cavalry in order to free tanks for the assault force. The SBF force may have to fight through some opposition to gain the most advantageous position to support the main effort and cavalry is able to do that.

Sweep

The forces used in a sweep can be cavalry, mounted infantry or ARHs depending on the terrain, threat and requirements for speed. The risk of ambush is high in this situation. Security would normally be achieved by cavalry and aviation working in cooperation, each clearing the next bound for the other.

Chapter 5

Armour 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 armour's unique characteristics and to use offensive manoeuvres. Any and all of the types of actions described in this chapter can and should be conducted by armoured BGs during the defensive.

Regardless of the situation in defence, armour must be deployed and controlled in a manner that permits the full exploitation of firepower, mobility and any potential for shock action. Key tasks for cavalry in defence are delay and security missions, as cavalry cannot engage main force units in attritional engagements without risking rapid destruction.

The basic considerations for each type of offensive activity are explained in [LWD 3-0-3, Formation Tactics](#).

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

Armour 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 HA. Land force defensive activities consist of two types of tactical actions:

- *Defence*. Defensive actions include the tactical tasks of:
 - area defence
 - mobile defence.

- *Retrograde*. Retrograde actions include the tactical tasks of:
 - delay
 - withdrawal.

Area defence

Area defence involves the planned occupation of ground of the commander's own choosing. Generally, there are two specific aims, the first is to draw or channel the enemy into selected engagement areas (EAs) to destroy them by firepower, and the second is to resume offensive activities as soon as possible.

Armour in all forms will be heavily committed to the covering force battle as well as being tasked in the main defensive position. The critical task for armour, in area defence, is countering the enemy's actions and providing high volumes of accurate direct fire into EAs from battle positions.

Siting options in defence

The timing of the commitment of armour remains crucial during the defensive battle. Prior to deploying armour to its battle positions, it is usually best held in depth in hide locations. However, there are some occasions when it may be located on the position.

Siting in hide locations. Siting in hide locations conceals vehicles from both direct and indirect fire, and enables deception. It usually means that the AFVs will not contribute to the available firepower in the main position, although the hide may be sited on a likely enemy approach. Hides may, however, be sited with nearby planned battle positions to block likely infiltration or penetration routes. If allocated under command of dug-in infantry, armour is sited as close as possible to the supported element. They then provide a firm base to the rear of the defending force through which withdrawal may take place, or a counterattack may be launched.

Siting within defensive areas. Siting within the defensive perimeter adds considerable firepower, but means that AFVs may not be moved as easily if they are deployed separately, particularly at night. Armour is capable of providing a heavy volume of direct fire that can be concentrated to the flank of an enemy assault. Such firepower could break up or disrupt an assault. Movement between fire positions, which is the normal drill after an engagement, may not be possible due to the siting of weapon pits. Additionally, consideration must be given to the siting of weapons pits or personnel in front of armoured vehicles dependent on the types of ammunition to be used. An example being the armour-piercing fin-stabilised discarding sabot which, when fired, produces a large amount of spall from the muzzle out to approximately 300 m, which can be lethal to unprotected personnel. The security of the position may be jeopardised by normal vehicle noises, and the requirement for servicing and replenishment.

The reserve

It is crucial to maintain a reserve in defence which is separate to the counterpenetration and counterattack force. Tanks and infantry mounted in APCs would usually contribute to the make-up of the force not committed to defending a particular area or task. It is the only ground force which, supplemented with OS, can manoeuvre freely offensively to exploit enemy weaknesses but also assault to regain the initiative.

Cavalry may also be used to constitute the reserve, but are limited in their ability to hold ground and are unable to fight on equal terms with enemy tanks.

Tanks in area defence

Tanks are best employed in tasks requiring manoeuvre. The best use of tanks in area defence is in the covering force, and then in counterpenetration and counterattack tasks. This does not prevent them from being used on the defensive position.

In area defence, each tank requires primary, secondary and alternate positions to occupy at each battle position, and room to manoeuvre in between. Accordingly, tank commanders at all levels must be involved in the initial defensive plan.

The tank offers the following advantages over APC-mounted anti-armour teams when firing from battle positions:

- it is less vulnerable to neutralisation and can continue to engage under enemy artillery fire
- it is able to fire through any fleeting gaps in the obscuration provided by the enemy's barrage
- it has a large and varied load of ammunition
- it can be redeployed quickly to threatened areas of the battlefield and can fight on the move
- it is able to switch targets quickly and has a high rate of fire
- it is not restricted by vegetation
- it requires less time to acquire and engage targets.

Command arrangements need to consider the ability of the tank commander to respond to changing circumstances and to pursue fleeting opportunities. The options for deploying tanks are to remain under command of the BG HQ with a series of tasks allocated throughout the area or to be under direct command of a CT. Allocating tanks piecemeal to CTs will reduce the flexibility of both the tank commander and the BG commander to concentrate fire. Tanks should not be allocated in a single platform and as a minimum should operate in a section (two tanks).

Armoured personnel carriers in area defence

APCs can be employed in most tasks within area defence. If used in security forces, APCs can be part of the covering force or screen to give the infantry commensurate mobility to the tanks or cavalry. They will normally remain in close proximity to the infantry unit they are supporting and will withdraw the infantry when required.

APCs can be employed in counterpenetration and counterattack tasks grouped with anti-armour teams and tanks. They may be held rear of infantry positions to enable them to react quickly to enemy actions.

Where the tactical situation allows, APCs can be deployed to engage in light offensive tasks, including reconnaissance, patrolling and OPs.

Cavalry in area defence

In area defence, cavalry has the primary roles of security tasks, counter-reconnaissance and maintaining contact with the enemy forces. Cavalry are usually among the last forces to be withdrawn through the main defensive position, and may by then need replenishment and significant rest before undertaking subsequent tasks.

If there is insufficient armour allocated to the defence, cavalry may constitute the reserve after completing security tasks. However, its availability after security tasks cannot be guaranteed, nor can its ability to prepare for counterpenetration and counterattack tasks. If cavalry is to be used in this role, it will require priority of effort from combat aviation and OS.

Light cavalry in area defence. Light cavalry can contribute to area defence through doing the following:

- manning OPs well forward of the BG/CT forward edge of the battle area along likely enemy approaches
- providing detailed surveillance of areas likely to be occupied or employed by the enemy
- providing observation patrols (ie, screening) over extended periods forward of unsecured flanks
- occupying forward hides to observe enemy locations and provide harassment by controlling indirect fire onto selected enemy positions
- undertaking other reconnaissance tasks.

Mobile defence

Mobile defence is based on battlefield mobility, which allows a commander to concentrate fighting power quickly. Mobile defensive battle is essentially an armoured battle, supported by infantry and combat aviation, and only conducted at formation level. It requires well-trained forces with mobility, firepower,

communications and a flexible command structure capable of sustaining high tempo activity, reacting quickly to fleeting opportunities and concentrating decisive fighting power. It requires armour in all forms, working in conjunction with combat and combat support elements, to be successful.

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

Deployment groups

Given adequate resources the commander's force should be divided into four groups: the covering force, the blocking force, the attacking force and the reserve.

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

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

The attacking force. The attack force is the essence of mobile defence and distinguishes it from other forms of defensive manoeuvre. It contains the bulk of the manoeuvre forces and relies on tanks, working with 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.

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

Mobile defence stages

The mobile defence battle should be fought by these four deployment groups in the following three stages:

- a covering force battle
- a blocking and holding battle
- an attack.

Tanks in mobile defence

The use of tanks must be planned early as they may be required within each of the mobile defence deployment groups. Tanks are primarily employed with the attack force. An attack force with insufficient tanks is unlikely to be successful.

Tanks may be used in guard or sniping roles and develop fallback positions to collocate with the APC-mounted infantry as options for increasing depth for the

holding force. If time permits, tanks allocated to the holding force must prepare battle positions and rehearse counterpenetration and counterattack plans.

Armoured personnel carriers in mobile defence

APC-mounted infantry will likely form the blocking force, or support tanks in the attack force. The tactics used by the infantry and their supporting APCs are similar to those in area defence. A heavy emphasis would be placed on the infantry battalion integral anti-armour weapons to destroy enemy armour.

Cavalry in mobile defence

The cavalry must conduct a genuine counter-reconnaissance task and simultaneously ensure that the enemy is deceived into taking the correct routes, without the cavalry being decisively engaged by the enemy. If the covering force becomes decisively engaged, the entire mobile defence is at risk.

The cavalry provides information on enemy movements and, if possible, should be grouped and tasked to channel the enemy's lead elements into designated EAs. If the covering force has a screening task it should be based on a cavalry unit. It may require some augmentation with tanks and APC-mounted infantry to control the enemy's arrival in the EAs.

In the subsequent stages, cavalry is essential to provide flank and rear protection for the holding force and the attack force. They may also be required to reconnoitre the routes for the attack force. The cavalry must be given time to regroup and reorganise in order to make and maintain contact with the enemy, enabling the attack force to break clean and retire to the next position.

Command and control

A clear statement of intent, a simple plan and the selection of terrain are essential in avoiding regrouping in the fast, high-risk climate of mobile defence.

For mobile defence, control measures are designed to enhance the rapid movement of forces and the execution of tasks. The control measures with respect to each of the deployment groups include:

- EAs
- break-clean lines
- attack objectives
- hides and assembly areas
- phase lines
- ABFs
- SBFs.

Armour combat service support in mobile defence

Mobile defence places greater than normal pressures on the administrative system because of the uncertainties concerning administrative requirements,

delivery locations and long distances. It will be necessary to pre-position or dump combat supplies, in particular, artillery and tank ammunition. The covering FE is likely to use a self-sufficiency method.

The blocking force and reserve have similar administrative requirements to those outlined in area defence and the attack. The mobile defence battle will require deployment groups to retain some administrative self-sufficiency, possibly with supplies on wheels and under command for movement.

Flexibility and redundancy are the key characteristics of successful administrative support for mobile defence. A simple plan for the CSS is essential as the fluid nature of mobile defence will require changes.

The repair and recovery support to the covering force may need to be increased to avoid abandoning vehicle casualties, rather than have the covering force decisively engaged.

Delay

The intent of a delay is to trade space for time while preserving the delaying force. It is conducted in contact with the advancing enemy, but decisive engagement is to be avoided. In the delay, the destruction of the enemy force is secondary to slowing their advance. The delay is normally a series of defensive activities over successive positions in depth, which trade space for time while retaining freedom of action.

The delay may be conducted by armoured forces under the following circumstances:

- during reconnaissance after making contact with a large attacking force
- during a guard task for a moving or stationary force
- as an economy-of-force for a larger force when inadequate fighting power is available for a defence.

Delay is a task frequently assigned to cavalry who are practiced in maintaining contact, avoiding decisive engagement and providing an unbroken flow of information. A BG may participate in a delay as part of a larger force, or cavalry may be tasked to conduct the delay while a formation prepares for defence or mobile defence.

The higher commander can direct a delay as part of their intent. As such, the delay may proceed despite apparent success achieved against the enemy and the natural desire to retain terrain. The cavalry will normally require reinforcement by tanks, engineers and artillery to perform a delay.

An armoured BG may conduct delaying activities during the conduct of covering force or in an economy-of-force role for a force or formation. It is possible that some CTs may delay while others perform missions such as ambushes.

Types of delay

There are two basic types of delay that differ in the intent of the assigning commander and the degree of decisive engagement that may be required, they are:

- delay in sector
- delay forward of a specified line for a specified time or event.

Delay in sector. A delay in sector mission requires the BG to slow and defeat as much of the enemy as possible without sacrificing tactical integrity. This mission, when assigned to armoured forces, enables maximum freedom of manoeuvre to the force.

Delay forward of a specified line. A delay forward of a specified line for a specified time or event entails significantly more risk. The BG is required to prevent enemy forces from reaching the specified area or penetrating a specified line earlier than the specified time or event, regardless of the cost. Decisive engagement may be required.

The delay planning is similar to that of a defence in sector and is characterised by requirements that make this mission extremely demanding. The armoured forces must repeatedly fight the enemy, disengage a part of the force, conduct an internal battle handover, and move rapidly to reposition and resume the fight. The commander must perform multiple tasks in a fast-paced environment while being engaged by direct and indirect fire, which places a premium on decentralised execution.

Mobility

The aim of armour in delay is to maintain a mobility advantage over the enemy to accomplish the frequent repositioning required. Mobility advantage is a tactical mobility that is greater than the enemy. The larger this advantage becomes, the greater the chance for success and the ability to dictate terms of the battle to the enemy. Mobility advantage is achieved by enhancing the mobility of the CT and degrading the mobility of the enemy. Knowledge of the terrain, preparation of positions, reconnaissance of routes, rehearsals and improving existing routes, all contribute to increased mobility.

Methods of delay

The method of executing the delay is determined by the nature of the terrain, the threat and the degree of delay required. The following are the two methods:

- delay from successive positions or phase lines
- delay from alternate positions or phase lines.

Delay from successive positions or phase lines is normally employed when squadrons are committed on a wide front. All subordinate troops are committed on each of the delay battle positions or across the sector on the same phase line. The delay from one phase line to the next is dictated by the mission and is normally

staggered. This technique has the advantage of concentrating fire, but the disadvantage of providing limited depth.

When operating on a narrower front, commanders may elect to delay from alternate positions or phase lines. When using this technique, the BG or squadron is divided into two elements. The first element occupies the initial battle position or phase line and engages the enemy. The second element occupies and improves the second delay position or phase line. This technique enables considerable depth, but requires continuous coordination.

Tanks in delay

The use of tanks in the delay simplifies the task as they are capable of holding ground on suitable terrain. Tanks may be augmented by infantry mounted in APCs. When tanks are used to conduct the delay, the flank and security tasks must be allocated to a separate force to avoid weakening the fighting power of the main defensive position.

Armoured personnel carriers in delay

APCs employed in a delay would, with the infantry they support, engage the enemy and withdraw through a firm base. They will often be grouped with tanks, but if not will need more terrain to trade for time than a tank-heavy force. A heavy emphasis would be placed on the infantry battalion's integral anti-armour weapons to destroy enemy armour.

Cavalry in delay

Delay is a common task assigned to cavalry. Cavalry will usually have a significant mobility advantage in most terrain. Cavalry must avoid being decisively engaged and will therefore need more terrain to trade for time than a tank-heavy force. Cavalry, ARHs and appropriate combat support are an effective delay force.

Combat support and combat service support in delay

The ACR BG conducting delay should include tanks, cavalry, and infantry mounted in APCs, augmented by engineers, aviation, electronic warfare, and OS in its grouping. The CSS team must be structured to support assigned assets.

The fluid nature of the delay requires combat support units to monitor the situation closely and remain mobile. CSS assets and CPs must also remain mobile. Passage of lines through a force to the rear may begin early for CSS and should be staggered throughout the battle. AFVs must not mass at passage points late in the battle as this provides the enemy with a lucrative target. This may lead to a breakdown in C2 at a critical point of the delay.

Withdrawal

The intent of a withdrawal is to disengage the withdrawing force to free them for other activities. It normally starts with the withdrawing unit in contact but contact is broken as quickly as possible. If it is the result of a local defeat it is likely to be

conducted under adverse conditions. The mobility and communications inherent in armoured forces are essential for the coordination of the withdrawal option as are the control measures necessary for an orderly withdrawal.

Tanks in the withdrawal. In the withdrawal tanks are usually employed as the rearguard. They will be tasked with achieving a clean break and handing over the forward edge of the battle area to the cavalry. They will need significant assistance from combat aviation and OS to achieve a clean break. They will also need significant GBAD support, as they are an unusually high-value target in the withdrawal. Ambush, counterattack and counterpenetration are other likely tasks for tanks.

Armoured personnel carriers in the withdrawal. APCs provide the infantry with the ability to be quickly withdrawn to intermediate positions in an armoured platform, or can be used as mounted security elements to protect flanks. APCs will need to withdraw with the assistance of OS or tanks due to their limited armament. Ambush, counterattack and counterpenetration are other likely tasks for APCs.

Cavalry in the withdrawal. Cavalry can form the basis of the covering force and is ideally suited to performing the difficult task of taking over from the rearguard. Cavalry can protect the flanks and conduct offensive manoeuvres including ambush and counter-reconnaissance. Cavalry will also locate routes and provide guides for formation level withdrawals.

Light cavalry in the withdrawal. Light cavalry can contribute to the withdrawal through:

- providing patrols to deny enemy information of the impending withdrawal
- undertaking rear route reconnaissance and marking
- providing route guides to effect a rearward passage of lines
- forming part of the rearguard
- providing reserve demolition, nuisance mining
- operating with other FEs to harass an enemy's advance
- manning OPs along the flanks of the withdrawal route, providing a commentary as the BG/CT achieves a clean break
- conducting counter-reconnaissance drills.

Tactical techniques

Tactical techniques include:

- battle handover
- breakout from encirclement
- convoy escort

- counterattack
- counterpenetration
- defend a battle position
- defend a strong point
- 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 at the battle handover line. As such, they are considered control measures to armoured forces.

Breakout from encirclement

There are two types of breakout:

- the deliberate breakout
- the breakout by stealth.

Deliberate breakout. The encircled force should be organised as for an advance. Guards may be required to undertake shaping tasks such as diversionary attacks or feints. Tanks, APCs and cavalry can conduct a deliberate breakout, however tanks will generate greater firepower and be better able to resist enemy fire. If tanks, APCs and cavalry are in an encircled force, the cavalry is best used to find the weakest point in the encirclement, the tanks with APCs supporting are best used in the breakout, and the cavalry can hold open the sides of the penetration while the remainder of the force escapes.

Breakout by stealth. Cavalry forces may choose to breakout by stealth but this technique involves great risk.

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, infantry mounted in APCs and aviation. High priority moves will most certainly warrant the use of armour to provide early warning, enhance firepower and enhance quick reaction forces.

The composition of a convoy escort will be based on the nature of the threat, but APCs or CRVs are ideally suited for this role because of their speed and manoeuvrability. A convoy escort task requires the following groupings:

- forward security

- flank security and close protection for the vehicles
- the reserve.

Counterattack

Armour can contribute to the counterattack with tanks providing direct firepower and/or APCs providing intimate fire support.

A counterattack task can be allotted 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 (eg, combination of mounted infantry and tanks, reinforced by ARH and OS) is generally sufficient. In a formation defended area, the counterattack force is likely to be a CT which includes infantry mounted in APCs and tanks, reinforced with ARHs and OS.

Counterpenetration

Infantry mounted in APCs or CRVs, reinforced with anti-armour weapons and OS are ideally suited to this task.

Defend a 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. Tanks are most suited to defending a battle position, but unless the battle position is large, tanks 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

The hub of the defence of a strong point is dug-in infantry, supported by tanks, APCs and other weapons. The tanks and APCs may be dug in on the strong point or held in a nearby hide until they are required. Manoeuvre space and planned routes are required if the AFVs are held off the position.

Defend in sector

Armour may be tasked to defend an assigned sector when flexibility is desired and 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 armour to manoeuvre and have freedom of action within their assigned boundaries. The boundaries allocated to armour 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.

Reserved demolition

Cavalry will be able to form a protective screen or guard around the reserve demolition. Ideally, this will be with support from tanks, APCs, ARHs and OS. Tanks will fall back to behind the reserved demolition but still provide direct fire support due to the range of their main armament. The remaining cavalry needs to ensure that it is not trapped on the far side of an obstacle when the feature is demolished.

Route security

Protection of lines of communication and the friendly forces moving along them 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. Armour, particularly CRVs and APCs, can play a key role in most of these techniques. A combination of CRVs, tanks, APCs and ARHs should be the preferred method of convoy escort in high-threat environments due to the speed and flexibility of this combination.

Spoiling attack

Armour, supported by APC-mounted infantry, aviation and OS, is preferred for spoiling attacks if space and terrain will allow.

Chapter 6

Armour in stability activities

Introduction

Stability activities are conducted to create and maintain stable conditions and are designed to maintain or establish a secure environment thus creating the conditions for the provision of essential government services, emergency infrastructure reconstruction and humanitarian relief. Stability activities may or may not involve the use or threat of force. Tasks range from HA, to training indigenous forces and the transition to a satisfactory endstate after major combat. Conducted throughout all campaigns, in conjunction with offensive and defensive activities, they may be the main effort to achieve a campaign objective.

Stability activities are usually conducted in complex physical terrain, with mixed populations and within a complex information environment. They are manpower and time intensive and incidents at the tactical level can have significant higher-level consequences.

This chapter describes the role of armour in stability activities.

Armour support to stability tactical actions

Stability activities are undertaken to establish control so that the whole-of-government effort can be applied to reform the security forces, restore essential services and to assist normal government to function. Interagency cooperation is fundamental to stability activities. The tactical actions that achieve stability are as follows:

- control
- reform
- restore
- assist.

Considerations for armour include:

- *Early deployment.* The early deployment of cavalry patrols will enable the force to develop familiarity with the TAOR and gain an early appreciation of the situation. It will also assist the commander to identify hostile activities, meet the intelligence requirements of the supported commander and

provide timely passage of this information to combat forces for denial activities.

- *Reconnaissance.* Armour, through extensive patrol activities, can provide information that contributes to a supported commander's intelligence, surveillance, target acquisition and reconnaissance plan to determine likely enemy targets, vulnerabilities and targetable critical vulnerabilities that may effectively undermine the enemy's centre of gravity.
- *Surveillance.* Cavalry patrols can maintain surveillance on likely or known hostile locations, movements, activities and intentions, through patrolling.
- *Community engagement.* Armour can provide a feeling of security and confidence for the local population. When working amongst the people, human intelligence can also be collected.

Control

Control aims to reduce disorder and violence to an acceptable level. Establishing a secure environment achieves the conditions for non-government organisations and civil agencies to operate; provides opportunity for the development or resumption of normal social, political and economic activity; and allows dialogue between the opposing factions. The purpose of control is to create the conditions in which reform, restore and assist can occur.

The tactical tasks associated with control vary from crowd control and curfew to vital asset protection, internment and detention. Armour provides support to control activities through the provision of information, firepower, rapid reaction and protected mobility. The rapid response and firepower of an AFV has a deterrent capability that will force an adversary to modify their tactics.

Tasks may include

- conflict containment
- crowd control
- curfew
- enforcement of out-of-bounds areas
- internment and detention
- key point protection
- population protection
- refugee and internally displaced persons movement
- separation of hostile forces
- supervision of ceasefire.

Conflict containment. The purpose of conflict containment is to prevent the spread of the conflict to neighbouring areas and states. Conflict containment requires interposition by either or both military forces and monitoring organisations to restore law and order; protect human rights; facilitate humanitarian relief; and other reform, restore and assist tasks. Armour contributes to this through the use of, or threat of using, armed force including:

- patrols to gather information and deter breaches of the peace
- counterinsurgency and counterterrorist tasks
- recording and collecting evidence of violations
- assisting other forces in arresting designated war criminals (through the provision of information, firepower or mobility).

Crowd control. Public order involves security forces managing and containing those groups and crowds intent on confrontation or violence. Responses to incidents of public disorder vary from tolerance, escalating through riot control, to the use of discriminate force. Military forces are restrained by international law and the need to apply reasonable and proportional force. Armour can contribute to crowd control either as a military force or in support of law enforcement agencies. CRVs and APCs can either gather information passively or apply firepower. APCs, CRVs and tanks can support law enforcement agencies and can rapidly reposition to trouble spots.

Curfew. A curfew is a means by which movement can be controlled for short periods. It may be general and imposed over a wide area or it may be restricted to a small area such as a town centre or housing estate. AFVs may be required for the following:

- cordons
- reinforcing roadblocks and other checkpoints
- intelligence, surveillance and reconnaissance
- monitoring or enforcing civilian vehicle movement bans
- mobile patrols to supplement the police.

Enforcement of out-of-bounds areas. Enforcement of out-of-bounds areas is a key component of conflict containment and also underpins the maintenance of the rule of law. A commander or civilian authority may assess that the only practical means of preventing and containing further conflict through protecting key infrastructure or vulnerable communities is by declaring the area 'out-of-bounds' and restricting all access to, or through, the declared area. Armour will be limited in the use of lethal force but can enforce out-of-bounds as follows:

- by contributing to cordons
- by supporting roadblocks and checkpoints
- by conducting mobile patrols to supplement the police.

Internment and detention. The ADF may be required to assist law enforcement agencies with internment and detention tasks. This is a generic term that encompasses all persons, other than ADF members, captured or otherwise taken into custody by a deployed force. All such persons in the custody of the ADF are referred to as captured persons until they have been classified. Internment and detention control tactical tasks comprise all actions which ensure the safe and secure movement, and the humane treatment of captured persons from the point of capture through to exploitation and classification, to internment or detention, and ultimately release or repatriation. Armour can be used for all these duties, however this would most likely be in support of law enforcement agencies.

Key point protection. Important buildings and installations may be targeted for hostile action because they are vital to the functioning of the government or economy, or because their damage or disruption is likely to be politically embarrassing. Additionally, key points and vital assets may include buildings or areas of cultural and religious significance. Armour may be tasked with key point protection and vital asset protection. This includes the requirement for security at the key point and all actions that are associated with its protection: routes in and out; movement of persons and vehicles to, through and from it; and the checking of all transits through it.

Population protection. Control involves the protection of civilians and general populations from conflict apart from the other control measures as described in this section. These measures include activity to provide immediate security to threatened populations in order to control residence, identity, movement, assembly and the distribution of commodities, therefore setting the conditions for the re-establishment of law and order and the rule of law. Armour supports population protection by ensuring that the secure environment exists in which other agencies can operate.

Refugee and internally displaced persons movement. The purpose of refugee and internally displaced persons movement control is to provide military assistance to specialist agencies for the movement and protection of refugees. Refugee protection and security can mean the requirement for designated safe areas and camps as a temporary measure. CRVs and APCs can transport refugees and internally displaced persons if necessary and can act as guides for non-government organisations.

Separation of hostile forces. Military forces conduct separation of hostile forces tasks to support the administration, monitoring and enforcement of agreed ceasefire lines. Armour can only assist with marking separation lines and ensuring that the separated forces remain within their own areas.

Supervision of ceasefire. Military forces may be deployed to supervise any commitments agreed to by the parties as part of a truce, ceasefire or other peace plan. The purpose of ceasefire supervision is to prevent further conflict, through a suitable structure and organisation. AFVs are able to supervise ceasefires directly through patrolling.

Reform

Reform is a tactical action to transform or train legitimate indigenous security sector forces and agencies to whom which the responsibility for national defence and internal security will be transferred. It necessarily includes police and paramilitary forces, security management, and oversight bodies such as legislators and management bodies. The purpose of reform is to ensure the following:

- that the quality of governance in the state, in terms of relationships between security institutions, the wider government and the general public is established and maintained
- that the technical competence and professionalism of those within the security institutions is established and maintained.

The tactical tasks associated with reform include:

- allocation and control of equipment and infrastructure
- disarmament, demobilisation and reintegration
- selection and recruitment of future security forces
- training, mentoring and the transfer of responsibility.

Allocation and control of equipment and infrastructure. Rebuilding indigenous security forces normally requires the issue of, and training on, new equipment and critical infrastructure. Allocation and control of this equipment and facilities requires effective distribution and accounting by coalition forces. In addition to new equipment, indigenous forces may require new or modified infrastructure. This also requires coalition management and an effective system to manage handover of infrastructure to host nation (HN) authorities. CRVs and APCs are able to transport and distribute new equipment. The task of training indigenous police and army on its use would then fall to others. Armour would not normally take part in the provision of training teams however armoured crewmen can be employed in this role. Building capacity of mounted/mobile forces should be done by mounted experts.

Disarmament, demobilisation and reintegration. Disarmament, demobilisation and reintegration is one element in a wider and longer term transition designed to reform the indigenous security sector and to reintegrate those military personnel, considered surplus to military requirement, back into society. The task invariably involves many civil and military agencies in a fully integrated reform plan. CRVs or APCs could supply the transportation that enables others to conduct the disarmament and demobilisation. Weapons that cannot be destroyed in situ could be taken back to a secure area in the CRV or APC. Unarmed ground vehicles might be ambushed to recover such weapons.

Selection and recruitment of future security forces. The purpose of selection and recruitment of future security forces is to ensure the establishment of an

effective and capable military and security force that has a culture grounded in national laws. Armour would normally only transport selection teams to inaccessible places.

Training, mentoring and the transfer of responsibility. Following the vetting process, Army training teams can facilitate the selection, recruitment and subsequent training of indigenous forces as part of the disarmament, demobilisation and reintegration program. Armour is unlikely to contribute to this action, however armoured crewmen can be employed in this role.

Restore

Restore is the process of 'post-conflict reconstruction' or 'provincial reconstruction'. Initially restore involves the provision of immediate health assistance, and essential services and facilities and is invariably associated with disaster relief. The results of restore should be tangible and lend themselves to publicity as part of influence actions. The purpose of restore is to re-establish essential services, facilities and infrastructure, and provide HA and health assistance.

Contribution

The primary contribution of armour to restore is the provision of protection and support to personnel and agencies undertaking restore. Some armoured personnel may have specialist trades which enable them to assist with the restoration of utilities and infrastructure. But as a collective group, armoured forces are not trained or equipped to provide essential services or infrastructure. However, their position in the community and their professional and personal relationships with individuals and groups enables them to support civil–military cooperation and liaise with the various community groups and councils.

The tactical tasks associated with restore include:

- immediate health assistance
- restoration of essential public utilities
- restoration of essential public services
- restoration of essential facilities and infrastructure
- restoration of post-conflict special services
- restoration of intellectual and institutional infrastructure.

Immediate health assistance. Health assistance is provided to assist the HN to cope with natural and national disasters. In the immediate aftermath of a disaster, whether it be natural or man-made, the land forces and the broader ADF health community is capable of providing a range of health support options. In an emergency, CRVs and APCs can be used in an ambulance role. When fitted with

stretchers and medical staff, the vehicles would assist medical staff with accessing remote areas and transporting critical cases to medical facilities.

Restoration of essential public utilities. Military forces help to re-establish essential public utilities in order to improve the standard of living for the affected community. Armoured support vehicles may be able to provide a lift capability to install key equipment in difficult locations.

Restoration of essential public services. Essential public services are those institutions that support the continued survival of the community. They depend on the availability of trained staff and specialist equipment, but do not necessarily require specialist infrastructure. They include such things as police, fire and rescue, waste management, and education. Armour can do little to assist other than for CRVs or APCs to transport vital stores when road and rail infrastructure may be compromised, or to provide unskilled labour.

Restoration of essential facilities and infrastructure. Military forces help to restore essential facilities and national infrastructure in order to enable restoration efforts to reach all corners of the affected area, provide for economic recovery, and provide freedom of movement to the population. Armour can do little to assist other than for CRVs or APCs to transport vital stores when road and rail infrastructure may be compromised, or to provide unskilled labour.

Restoration of post-conflict special services. The purpose of providing post-conflict special services is to remove the direct and immediately damaging residual effects of the conflict. Post-conflict special services are those functions unique to post-conflict or confrontation periods that facilitate the restoration process; for example, clearing unexploded ordnance and booby traps. Armour can do little to assist other than for CRVs or APCs to transport key personnel when roads may be compromised, or to provide unskilled labour.

Restoration of intellectual and institutional infrastructure. Military forces and supporting agencies help to restore intellectual and institutional infrastructure in order to enable the development of independence and cultural development in accordance with nation-building and political objectives. Restore tasks involve significant interagency work and cooperation. Armour will generally provide the secure environment in which the restoration can take place or supply unskilled labour to assist other agencies with the restoration.

Assist

Assist aims to preserve the rule of law, enable the conduct of elections, and provide HA and environmental assistance (in the form of selected services). Examples of assist conducted abroad include Australian assistance to elections in Cambodia, and HA to Somalia which involved armour providing route security, convoy escorts, armoured transportation, establishment of security points and checkpoints, and patrolling.

The provision of assistance requires commanders to liaise closely with civilian authorities and military counterparts, establish links with communities and agencies providing support, and establish communications networks if required. Tasks include:

- support to rule of law – specifically against criminal activity
- support to elections
- enabling HA.

Support to rule of law – specifically against criminal activity. The purpose of this task is to deliver personal security for the population, particularly against criminal activity, and set the conditions for the resumption of normal economic and social activity. Armour may be required to assist with internal security while indigenous forces are being trained. This could be cavalry or APCs patrolling key sectors or critical points, any AFVs using the vehicle sensors to detect criminal activity, and using the communications suite to coordinate a response.

Support to elections. The purpose of establishing and monitoring elections in a HN is to establish a democratic basis for interim governance by the HN and to ensure that democratic processes, once established, can be maintained. While military involvement underpins the electoral process, largely through the creation of a secure environment, it cannot do so effectively without an election framework – which is a collaborative responsibility of the UN and HN bodies. Armoured involvement is likely to be provided by CRVs or APCs in the form of transporting the personnel to establish voting centres (particularly in remote areas or where the roads are insecure), transporting votes to counting centres, and carrying the reserve force or indigenous security forces if they need to respond to outbreaks of trouble.

Enabling humanitarian assistance. A military force is only likely to provide HA when the security conditions in an area preclude the involvement of non-government organisations and other civil agencies. HA is not always conducted in a permissive or benign environment, and may require a peacekeeping force or other force for protective tasks. In enabling HA, APCs, tanks and cavalry might contribute to the secure environment that will allow non-government organisations and other civil agencies to work. CRVs and APCs could also assist with the delivery of food and potable water, and transport medical teams to provide first aid, or act as ambulances.

Tactical techniques

Stability activities tactical techniques are military ‘methods’ for accomplishing a result in particular situations. They are intended to improve efficiency and uniformity of action, and 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
- non-combatant evacuation
- recovery of personnel and equipment
- TCPs 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.

Armour will primarily contribute to the cordon and any ready reaction force. The considerations for cordon and search are contained in the section in Chapter 4 on tactical techniques.

Non-combatant evacuation

The armoured contribution to non-combatant evacuations is as follows:

- *Permissive.* A non-combatant 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. Cavalry or APCs may provide a range of assistance to authorities including:
 - information on the operating environment
 - networked communications
 - transport of personnel
 - liaison with community leaders, evacuees and the evacuation handling centres
 - liaison with habitually affiliated support organisations.
- *Non-permissive.* A non-combatant 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. APCs escorted by cavalry and/or tanks may be a feature of any non-combatant evacuation in a hostile environment. In addition to the services provided in a permissive environment, armour would also provide security in the form of:
 - information on hostile forces or hot spots
 - convoy escorts
 - route clearances

- ready reaction forces
- manned evacuation points
- secured landing zones.

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, airmobile and withdrawal in contact. Armour could contribute tanks, APCs and cavalry to any assault force. CRV sensors would be used primarily to gather information. The main weapons of the AFVs might be useful in some situations (eg, destroying hostile vehicles or creating entry points in barricades); however, the vehicle firepower is primarily an insurance policy if the recovery does not go according to plan.

Traffic control posts and vehicle checkpoints

AFVs can form an integral part of the checkpoint or control point, or provide on-call firepower to the organisation manning the checkpoints or control points.

Chapter 7

Armour in enabling activities

Introduction

Enabling activities are never conducted in isolation. Their purpose is to link and create the conditions for the conduct of offensive, defensive and stability actions, ensuring continuity and maintaining tempo. They do not have any associated specific tactical actions.

Enabling activities are as follows:

- link-up
- march
- obstacle crossing and breaching
- passage of lines
- relief in place
- patrol
- reconnaissance
- surveillance.

Enabling activities may be conducted as missions in their own right. For example, a march followed by an obstacle crossing may be required before a force arrives at the start point for a reconnaissance patrol. This chapter describes armour in enabling activities.

Armour support to enabling actions

Enabling activities include those intended to make or break contact with the threat, and those that can be conducted out of contact. Enabling activities may be conducted as missions in their own right.

Link-up

Armour support could be in the form of information on the location of the two forces to be linked, in the application of firepower to destroy any threat between the linking forces or in the provision of flank security during the link-up. Detailed planning considerations for a link-up are contained in [LWD 3-0-3, Formation Tactics](#).

March

Armoured and mounted-infantry BGs must often travel long distances in order to position themselves to perform their next task. The primary consideration of the march is rapid movement, but security is required even when contact with enemy ground forces is not expected. The primary consideration is the rapid but secure movement of units. Cavalry will provide the screen, route clearance and security functions it provides for any other tactical activity.

Obstacle crossing and breaching

A crossing or breaching action can be either hasty or deliberate as follows:

- *Hasty.* Hasty crossings are executed from the line of march. Armour's characteristics are ideal for hasty crossings.
- *Deliberate.* A deliberate crossing is conducted when a hasty crossing fails or is inappropriate. Armour may be employed for deliberate crossings in much the same manner as hasty crossings.

The crossing or breaching action will be either quiet or noisy as follows:

- *Quiet.* Armour is not generally suited to quiet breaching or crossing activities because of its associated noise and dust. However, it can be employed in a deception plan or on prearranged tasks once the breach becomes noisy. Direct fire support and mechanical breaching, once the breach becomes noisy, are examples of prearranged tasks.
- *Noisy.* Armour can provide the breaching force, and elements to reconnoitre the obstacle and to provide direct fire support and far bank security and disruption; after finding alternate crossing points which may not be suitable for the main FEs.

To undertake breaching, armoured forces should be grouped with appropriate specialist equipment. Breaching activities conducted without specialist equipment increases operational risk and therefore, armour is reliant on external mobility support.

In order to retain the initiative and regain momentum once across, it is preferable to avoid using the only armour available to breach or cross obstacles.

Armour can contribute significantly to a breach or crossing activities. Cavalry can reconnoitre the obstacle in detail and participate in or provide a deception plan. Tanks provide large calibre accurate fire in either an SBF or ABF role as well as the best means of exploiting the breach. APCs can lift those engineers or infantry required and then provide intimate protection and fire support.

Passage of lines

Passage of lines for armour is an SOP activity, at unit or BG level, as such activities happen routinely in the course of an advance or during a phased attack.

Conduct. Extensive use of LOs and designated routes enable armour to quickly conduct the passage of lines. The following two forces conduct the passage of lines:

- *The in-place force.* Armour in the in-place force can support an in-transit force primarily by SBF and advice on suitable vehicle routes. Armoured elements, with their integral communications and mobility, can assist with route selection and traffic control. Tanks may provide effective fire support as the in-transit force leaves the friendly forward edge of the battle area. The in-place joint force commander assumes control over the in-transit force while it is within their boundary. The higher formation HQ must indicate a clear time or point of relinquishment of this control, which normally includes support.
- *The in-transit force.* In the case of an advance, cavalry elements usually precede the main body of the in-transit force. Armour's mobility will enable an expedient passage if sufficient planning and liaison has occurred. Armour, in this force, should expect to be guided through the in-place force and to be provided with fire support as it breaks out of the friendly forward edge of the battle area. Space needs to be allocated for the lead elements to regroup before breaking out. Combat aviation and other OS reinforce this.

Armour in the in-transit force should be fully administered prior to deployment and, preferably, prior to entering the TAOR of the in-place force. The in-transit force normally has its echelon move with it. If there is a suitable armoured echelon in the in-place force, armour in the in-transit force may take further or final replenishment in-transit or just prior to the transit. This requires careful planning, particularly if it is to be conducted at night.

Relief in place

Armour uses relief in place to relieve surveillance teams or patrols on extended missions, or to withdraw forces that have been in contact in order to rest and restore them. Strict control measures are required to avoid fratricide and prevent the adversary from learning the nature of the action and seeking to disrupt it during a time of vulnerability.

Patrol

Patrolling is a core business of armoured units in the provision of security and protection, and in the gathering of information through reconnaissance or surveillance. Armoured security forces can advise other forces on issues such as terrain, weather, surface conditions, going, routes, obstacles, infrastructure, flora and fauna, and communities and people likely to be encountered.

Reconnaissance

Reconnaissance patrols are a primary cavalry task. Cavalry forces frequently undertake reconnaissance missions in their own right or in cooperation with other forces such as combat aviation, SF or regional force surveillance units.

Counter-reconnaissance is an active task for armour that involves aggressive and sustained action to destroy or repel enemy collection assets. It must also include the passive measures of surveillance to identify the enemy's reconnaissance objectives, and measures taken to deceive the enemy about own force activities. Armour in security activities, and usually cavalry, employ the full range of offensive and defensive tactics and techniques to accomplish the counter-reconnaissance task. They may employ ambush, quick attack or indirect fire.

Surveillance

Surveillance is a primary task of cavalry who maintain focal area surveillance on likely or known enemy locations, movements, activities and intentions, through patrol activities and static OPs. Patrols can cue response assets for detailed reconnaissance or tactical action.

Chapter 8

Combat service support

Introduction

An AFV without fuel or ammunition is a soft target and leaves the supported force with a capability deficiency. The mission of armoured CSS is to sustain the fighting power of armour on a continuous basis as far forward as possible.

Armour consumes combat supplies at higher rates than most other elements of the land force. One measure of effectiveness of CSS is that it is capable of generating sufficient fighting power at the decisive time and place on a continuous basis. The armoured CSS system must enable the generation of fighting power and enable the freedom to manoeuvre.

Armoured CSS involved in high tempo large-scale actions, will need large quantities of POL and ammunition. All resupply and services must be planned to support armour in the face of a non-linear battlespace, a hostile air threat, rapid transition from one activity to another and extended lines of support.

In grouping for battle, the support systems for a variety of platforms and vehicles (ground and air) must be streamlined and made available as soon as needed while being capable of redeploying themselves. This chapter describes the provision of CSS to armour and within armoured units.

Organisation

Like most other arms and services, armour uses an echelon system to describe its fighting and CSS elements. The echelon classification used by armoured units is as follows:

- *F echelon.* F echelon consists of the personnel, vehicles and equipment required to fight the battle.
- *A echelon.* A echelon consists of the personnel, vehicles and equipment which must be readily available to replenish the F echelon at any time. In armoured units, A echelon is split into:
 - *A1 echelon.* A1 echelon provides the immediate battlefield administrative support to the F echelon at CT level. The A1 echelon is the squadron commander's CSS asset and includes, but is not limited to, combat supplies, repair and recovery, and medical aid and evacuation teams. The A1 echelon moves immediately behind the

F echelon. The composition of the A1 echelon may vary according to the tasks allocated and may be supplemented from A2 echelon.

- *A2 echelon.* A2 echelon is the regimental commander's reserve of ammunition, POL, and logistic and technical resources. The A2 echelon provides the regiment's daily resupply and holds the immediate reserve of combat supplies. It provides casevac, and first-line repair and recovery facilities in conjunction with the squadron's A1 echelon. The composition of A2 echelon may vary according to the tasks allocated to the regiment.
- *B echelon.* B echelon consists of the vehicles and soldiers not required in F echelon or A echelon. B echelon handles most of a regiment's administrative documentation, as well as providing the necessary personnel and logistics liaison with the appropriate CSS units and formation staff.

The success of the system depends on the A1 echelon and A2 echelon commanders keeping informed on the current groupings and tactical situation. BG and CT echelons submit demands and receive rations, fuel, ammunition and clothing for all personnel, and vehicles on their current strength.

In most circumstances, the A1 echelon and A2 echelon elements will remain with their parent BG and are not brigaded unless there is an acceptance that the armoured BG may be less than combat ready. Logistic support can be tailored for a specific mission or task, or to ensure BG viability. This is achieved by temporarily removing some A echelon or B echelon elements to provide a formation-controlled logistic element. However, this will impact the readiness of the armour whose logistic elements have been taken.

Functions

The CSS functions are as follows:

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

Supply

Armour requires frequent replenishment during intense activity with urgent demands being met by the fastest available means. Replenishment of cavalry and APCs generally occurs at least once every 72 hours, or more frequently as required by the mission tempo. Tank replenishment is governed by the rate of

effort and the high demand for fuel, and is likely to be a daily requirement. Armoured units should take every opportunity to replenish combat supplies as this enables flexibility.

The replenishment system within armour is divided into the following two compartments:

- *Combat supplies.* Combat supplies of Class 1, Class 3 and Class 5 are normally supplied automatically in the daily maintenance cycle covering consumption periods of 24 hours. Combat supplies held in A1 echelon are available on an 'as required' basis to armoured troops. A2 echelon will provide other stocks of urgent items such as ammunition.
- *Other classes of supply.* Supply items of Class 2, Class 8 and Class 9 are demand items, of which only limited stocks are held in the A1 echelon area and would normally be brought forward by the A2 echelon. Class 4, Class 6 and Class 7 will need to be requested through the A2 echelon as they are not held within the A1 echelon. Depending on the urgency of demand, they will be provided during the daily maintenance cycle or brought forward immediately if transport is available and clearances are arranged.

When grouped for battle, squadrons will be detached from their parent regiment for an extended period and will bring their A1 echelons with them. Except when specifically detailed otherwise in orders, the supported BG becomes responsible for all the administration of its attached armour, and should seek the advice of the squadron 2IC as to the requirements and possible synergies.

It will usually be necessary for the parent regiment A2 echelon to supplement the A1 echelon, including additional technical support to the receiving BG. The squadron A1 echelon then works with the administrative system of the BG or formation it is supporting. The A1 echelon should have an element, including personnel and logistics representatives, located with the supported BG A2 echelon. However, as the A1 echelon remains under the command of the squadron commander this is not always possible.

Replenishment methods. Armoured vehicles may be replenished using a number of methods which are determined largely by the likelihood of enemy contact. Replenishment can be conducted as follows:

- in harbours, leaguers or individual troop hides
- curbside
- in a rendezvous established by the A1 echelon or A2 echelon
- air delivered; or
- in certain situations, immediate battlefield replenishment may take place well forward, even in individual AFV battle positions.

Maintenance

Maintenance support to armoured elements is integrated at the squadron level and maintained in the field within the A1 echelon. Servicing is the key to armoured maintenance support. Adequate time for daily, weekly and other servicing must be factored into all plans; approximately 24 hours every 72 hours. Commanders must balance the risks of missing servicing with any temporary advantage gained in tempo.

Transport

Armour relies heavily on support from second-line transport, particularly for the provision of bulk fuel and ammunition.

Engineering sustainability

There are no specific CSS tasks for engineer sustainability support to armour. Armour does benefit from any engineer improvements to roads, water supplies, obstacle crossings and defensive locations.

Combat health

Armoured units have an integral tracked or wheeled ambulance variant at squadron level.

Personnel support

There are no unique implications for armour.

Application

Lines of support

Lines of support describe from where the type of CSS support has been provided and the command authority. The four lines of support for armoured units are as follows:

- *First line.* First-line support pertains to resources and activities under the control of a BG commander to provide CSS to that BG. The support available to an armoured BG is found in the A echelon and B echelon. A echelon is divided into the A1 and A2 as discussed previously.
- *Second line.* Armour requires substantial second-line support, including transport to move significant quantities of fuel and ammunition, and extensive holdings of repair parts stores.
- *Third line.* The range and depth of third-line support will be tailored according to the mission.
- *Fourth line.* National support base logistic organisations or contractors outside the theatre provide fourth-line support. In many cases for armour, it will be in the form of contracted specialist civilian mechanical support.

Host nation support. Support from the HN will be extremely valuable during coalition operations. Therefore, the coalition command must analyse the physical infrastructure in the HN. This analysis should reveal what facilities and services are available to support the command and how they can reduce the logistic footprint. The coalition may establish a coalition contracting centre to facilitate coalition procurement of scarce resources. However, the very involvement of coalition forces often means that local resources will require supplementation.

Contractor logistic support. Contractor logistic support is the use of pre-planned and opportunistic civilian contracting to perform selected logistic support services. Care must be taken to balance the convenience of holding contractors forward with the resource burden of providing protection and the legal and moral obligation to keep civilians out of combat areas. In a coalition, contractor logistic support is a national responsibility. However, nations should share vendor information, lessons learned, and contacts with the coalition command and other nations.

Tasks and responsibilities

At troop level, CSS is the role of the troop leader and troop sergeant. At squadron level the 2IC has a staff responsibility and works with the squadron commander, the A1 echelon commander and others to deliver CSS. At regimental level the S4 logistics staff officer has the responsibility and works with the CO, OPSO, S4 technical, OC support squadron and others to deliver CSS outcomes.

The HQ of the BG A2 echelon monitors progress, forecasts sub-unit requirements for combat supplies and attempts to anticipate the more urgent requests. This involves selecting rendezvous (which are normally suggested by sub-units), routes, communication arrangements, and the issue of resupply orders and information to sub-units.

Vehicles from the A2 echelon normally collect supplies from distribution points. These supplies are held as either commodity loads or composite loads until they are dispatched forward to sub-units. Empty or partially depleted vehicles returning from sub-units may be refilled from supplies held in the A2 echelon, replaced by full vehicles or sent directly to the distribution point. When dispersed, such as when acting as a screen, combat supplies and stores may be delivered directly to the F echelon.

Within the F echelon, troop requirements of all supply items are collated by sub-unit HQ. For urgent supply needs this information is usually passed by radio. Demands for non-urgent items are normally made in writing and passed back by hand or data transmission. There is no fixed rule for the system of replenishment. The aim is to provide a flexible system capable of providing what is needed in the quickest and most economical and effective way. Second-line or air transport may deliver directly to A echelons or even to forward troops.

Equipment recovery. AFV recovery can be a demanding and dangerous task even in peacetime. Echelon responsibilities are as follows:

- The A1 echelon has an A vehicle recovery element within it that is responsible and capable to enact immediate A vehicle recovery. Usually the vehicle will be recovered.
- The A2 echelon has the B vehicle recovery assets that enable backloading. Usually such vehicles will return the damaged vehicle to the second-line support or regimental A2 as directed by the BG HQ.

Chapter 9

Armour employment in specific environments

Introduction

Different environments have a unique impact on vehicles, personnel and equipment that changes groupings, tactics and procedures. Personnel will require special training for each environment and armoured vehicles will require specific preparation. Failure to undertake the required training and/or modifications will compromise the armoured capability.

This chapter describes the nature of the physical environment and its impact on armour. It considers activities in the tropical, desert, cold weather, urban, CBRN and mountainous environments.

Doctrine. The key publication relating to operations in tropical, desert, cold and urban environments is [LWD 3-9-1, Operations in Specific Environments](#).

Tropical

Impact on capability

The following are the impacts on armour:

- *Limited observation.* The degree of visibility is dependent on terrain and the time of year, with visibility being reduced to as little as 5 to 10 m. This may make it difficult to identify friend from foe or detect the enemy. This may also degrade situational awareness. Armoured vehicles equipped with TI sights are able to overcome some but not all of these observation limitations. Crews in closed down vehicles have their observation further restricted.
- *Concealment.* It is difficult to locate the enemy in close country and to estimate strengths, deployments, and intentions. However, armour is easily concealed for ambushes or reconnaissance tasks. The potential for shock and destruction generated from armoured vehicles ambushing at close range is good.
- *Suppressing fire.* The combination of trees, broken ground and natural features will generally result in restricted fields of fire. Mutual support may be difficult to achieve. AFVs can generate high volumes of suppressing fire. Tank gunfire and heavy machine gunfire has a devastating effect in this environment, as it will easily penetrate most trees and foliage.

- *Restricted space.* Close country consisting of mature trees and thick jungle will limit the movement of vehicles and restrict the employment of support weapons. Where vehicle movement is possible it may be forced to operate in narrow manoeuvre corridors, making it vulnerable to ambush if operating without combined arms support.
- *Rainfall.* High rainfall that typifies this environment may reduce the ability to manoeuvre armoured vehicles. However, Centurion tanks weighing more than 50 t were able to operate effectively all year round in Vietnam 40 years ago. Tracked vehicles will manoeuvre more freely than wheeled vehicles, but may degrade the roads leaving them impassable to wheeled vehicles and even cause problems to dismounted troops.
- *Night activities.* All environmental impacts are increased at night. Effective movement off tracks by armour at night is almost impossible to achieve. This limits the effectiveness of patrols and renders night movement hazardous and prone to ambush, and also to vehicles becoming bogged. Under thick canopy, ambient light is almost reduced to zero, making image-intensifying devices ineffective but does not impact on TI or unattended ground sensors. Night activities should be planned carefully and should focus on ambushing and reconnaissance which usually allows deployment at last light.
- *Signature.* Close country is an aid to reducing an AFV's signature, with less dust and noise. At night, noise from an AFV travels further but is harder to accurately locate.
- *Value of the tank.* In close country, tactical opportunities are fleeting and engagement occurs initially at close range. In the tropical environment, the more firepower a small element can bring to bear on the enemy the greater the likelihood of fixing or destroying that enemy will be. The tank, with its protection and firepower is a particularly useful system; it is capable of rapid, accurate direct fire and has excellent ballistic protection.
- *Reduced tempo.* The close vegetation and terrain features slow vehicle movement. Planning and the smart use of vehicles helps mitigate this, as does working closely with combat aviation. In the dry season armour can maintain a high tempo, but during the wet season the tactical advantage will come from surprise and firepower rather than speed and mobility.
- *Vehicle servicing.* Vehicle servicing in tropical environments is made difficult by the rainfall and the lack of hardstanding. Periodic servicing should be increased to ensure vehicle reliability in combat. Sufficient hardstanding must be located and available.

Planning factors

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

- the effects of adverse weather and particularly the effects of monsoonal conditions
- possible reduced tempo
- degraded vehicle performance due to slopes and vegetation
- difficulty of combat identification
- reduced sensor footprint and effectiveness due to vegetation and weather
- reduced air support due to reduced aircraft performance, dense canopy and poor weather conditions
- potential for ambush or canalisation
- need for combined arms support, particularly infantry and engineers
- possible lower vehicle serviceability rates and a changed maintenance regimen necessary to ensure vehicle availability
- the requirement for combined arms team synchronisation and training
- the requirement for acclimatisation and in-theatre training.

Desert

Impact on capability

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

- *Heat.* The extreme heat has a particularly debilitating effect on AFV crews. Operating temperatures in AFVs may exceed the outside temperature. When combined with the noise and stress of the operation, crew endurance can be dramatically reduced.
- *Cold.* Cold night temperatures are also a factor of desert operations. See the section in this chapter on cold conditions for its implications.
- *Signature.* Dust and tracks are easily visible, particularly from the air, and the thermal signature is more distinct, particularly at night. The vehicle signature in the desert means extensive deception is required.
- *Wind, dust and sandstorms.* Desert environments may experience winds of up to hurricane force. Suspended dust and sand can make movement and maintenance difficult, and can severely restrict visibility. Wind aggravates this problem. While satellite navigation systems and TI will usually work through dust, other optical systems do not and exposed communications

equipment may be damaged. Similar damage may be inflicted by blown sand on the moving parts of machinery or through vehicle accidents caused by the lack of visibility. Sandstorms also limit safe movement of armoured vehicles.

- *Night.* A full moon permits rapid vehicle movement cross-country, with even a quarter moon providing sufficient light to drive without aids. Open terrain and ambient light enhance night fighting equipment as a significant combat multiplier. The thermal signature of armoured vehicles is more easily detected at night when the ambient temperature decreases.

Planning factors

The additional planning considerations for using armour in a desert environment include:

- *Vehicle preparation and servicing.* Servicing schedules must be updated to include more rigorous cleaning of filters, sensors and radio equipment. Maintenance tempo must increase to maintain vehicle serviceability, necessitating the requirement for increased levels of Class 9 items.
- *Air threat.* The desert environment is one in which armour is particularly vulnerable to precision air-delivered munitions. Planning, intelligent vehicle movement, GBAD and aggressive use of air resources are needed to mitigate this.
- *Movement.* The ability to move is almost unlimited but significant obstacles, such as wadies and mesas, will still create difficulties, particularly if they are enhanced as obstacles by the enemy. Solutions may require initiative in the manoeuvre plan. Bypassing potential obstacles is always preferred over having to breach them.
- *Infantry and aviation support.* Infantry will need to be mounted in APCs to maintain speed with armour. Protected lift vehicles may not provide the same mobility. Infantry forces may become rapidly fatigued after long periods spent travelling in the cramped, hot and noisy conditions of an APC. Aviation is ideally suited to support actions in the desert due to its complementary speed, range and firepower.
- *Fuel.* To maintain tempo in the desert, the key commodity is fuel. If necessary, air assets should be prepared to deliver fuel forward to A2 echelons. The extensive use of the B vehicles for fuel resupply demands careful consideration of suitable routes.

Cold conditions

Impact on capability

Significant factors that impact on the capability of armour in cold weather environments include:

- Low temperatures, wind, ice and snow can impact the use of vehicles, serviceability rates, maintenance practices, ground support and personnel capability. Additional time is required to complete all tasks.
- Poor visibility and strong winds may prohibit flying, and contingency plans are required for the event that combat aviation is not available.
- Operating in snow can be difficult due to glare, a reduced or no horizon, and a limited or no depth perception. Additionally, glare can also reduce the effectiveness of optical sensor systems.
- Preheating of key vehicle components may be required in temperatures below 0 °C.
- During cold weather, vehicles develop increased static electricity. High levels of static electricity increase the level of risk during refuelling and re-arming. 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.

Planning factors

The additional planning considerations for using armour in cold weather include:

- *Movement.* Wheeled vehicle mobility will be restricted to formed roads. They will be forced by ice to operate at reduced speeds. Tracked vehicles have the potential to provide greater mobility over rough terrain and on formed roads, even when the roads are affected by adverse weather. To achieve this potential, snow tyres or winter tracks must be fitted to the vehicle, as appropriate, prior to initial deployment.
- *Vehicle running.* The impact of extreme cold weather on vehicles depends on the vehicle type. Manufacturers' specifications for cold weather operation must be followed. Vehicle battery life will be reduced and, therefore, vehicles will need to be run more frequently. Vehicles may have to be run in order to prevent cooling systems freezing. Vehicle running will have an impact on signature, increasing both noise and thermal output.
- *Maintenance.* Repairs and major maintenance should be carried out in shelters, preferably heated. Forward repair teams should be equipped with their own shelter and heater, and will require protection while working in the shelter. Hardstanding required for repairs and maintenance is rarely difficult to find.

- *Aviation.* Aviation may not be available in periods of poor weather.

Urban

Impact on capability

Significant factors that impact on armour in urban environments include:

- limited fields of fire and observation
- manoeuvre and firepower will be limited by the civilian population, as in most cases the civilian population or elements of it will remain
- difficulty in estimating the strength of the enemy
- many of armour's more sophisticated and long-range weapons and sensors cannot be employed to their full capacity and weapon effects may be attenuated
- reduced possibilities for manoeuvre by armour, but increased possibilities for infiltration and bypassing by dismounted elements
- close quarter combat increases the vulnerability of AFVs as they remain within the effective engagement envelope of short-range anti-armour weapons
- non-linear threats become more likely, including IEDs such as roadside bombs
- difficulty in resupplying ammunition and other combat supplies.

Planning factors

The additional planning considerations for using armour in urban environments include:

- *Firepower.* The use of direct fire support to assist movement must be maximised in this environment. The collateral damage caused and the problem of clearing damaged building or areas must be considered, and depends on the rules of engagement. HE and AP rounds are effective against enemy hiding behind solid structures.
- *Infantry support.* All armoured vehicle crews have reduced visibility in urban environments. This impact means all armour must operate with dedicated infantry support. Within existing command structures and standard groupings, infantry need to be assigned to work with individual vehicles. The vehicles afford the infantry some protection while providing substantial volumes of direct fire in close proximity to infantry movement.
- *Main armament elevation and depression.* Commanders must be conscious when working in the urban environment of the limitations of an armoured vehicle's main armament elevation and depression limits at close-range targets. Equally affected will be the traverse arc of the turret.

- *Briefings and rehearsal.* For infantry and armour to work effectively in this environment, detailed briefings on vehicle and weapon effects need to precede rehearsals. All infantry must practice directing vehicle weapon fire and movement. Failure to rehearse may result in high friendly casualties.
- *Movement.* The ability to move is generally very limited. Progress will be slow due to rubble, narrow streets and limited visibility. Techniques for clearing a path through or over obstacles should be rehearsed, as some armoured vehicles may expose their lightly armoured aspects as a result of crossing or attempting to cross obstacles.
- *Coordination of fire.* Short-range weapons and grenades will be used extensively and there may be difficulty in firing weapons with a back blast. Mutually supporting fire will also be difficult to achieve. The damaging effects and penetration of targets by the armoured vehicles main armament requires the careful planning and coordination of fire.

Chemical, biological, radiological and nuclear

Impact on capability

Effects on armour of operating in a CBRN hazard environment include:

- *Restricted operations.* Even with functioning vehicle protective systems, crews will wear protective equipment and keep their respirators close by. If the vehicle system fails or needs to be breached, crews should be capable of continuing in a contaminated environment.
- *Difficulty in operating the armoured fighting vehicle.* Operating AFVs in the CBRN environment means that function and task is difficult to perform. Specific consideration should be given to the following:
 - radio communications are more difficult as voices and hearing are restricted
 - although respirators are designed to be compatible with sights, vision will be inhibited.
- *Crew fatigue.* The expected operational stresses are enhanced by the physical discomfort and mental stress associated with working in a CBRN environment.
- *Dismounted activity.* Activity outside the vehicle in contaminated environs should be limited. Where possible, troops should be removed to a safe area to conduct servicing and personnel administration.
- *Decontamination.* Operational decontamination takes time and considerable effort.

Planning factors

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

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

Mountainous areas

Impact on capability

Generally, mountainous terrain forces armoured vehicles to operate along the valley floor or along ridgelines above it. The steep and often rocky terrain on the sides of the valley severely limits the movement of wheeled vehicles and is too restricted for tracked vehicles.

AFVs are generally limited to movement in valleys and existing trail networks at lower elevations. Even at these levels, the trails may require extensive engineer work to allow tracked vehicles to pass over them. AFVs can provide SBF if accessible firing positions are available; however, it will rarely be possible for them to accompany dismounted infantry in the assault. Low atmospheric pressure considerably increases the evaporation of water in storage batteries and vehicle cooling systems, and impairs cylinder breathing. Consequently, vehicles expend more fuel and lubricant, and engine power is reduced by 4 to 6 per cent for every 1000 m (3300 ft) increase in elevation above sea level. This translates to a fuel and oil increase of 30 per cent or more.

Planning factors

Some additional planning considerations for using armour in mountainous areas includes:

- Recovery vehicles must always accompany mounted forces in mountainous terrain to rapidly remove disabled vehicles from the limited and narrow trail network.
- Although antitank weapons employed from higher elevations can easily penetrate the top of armoured vehicles, in many situations the inability to elevate the weapon system's main gun sufficiently to return fire may further increase its vulnerability.

Endmatter

This publication should be read in conjunction with the following publications:

- *American, British, Canadian, Australian Coalition Operations Handbook, Edition 4*
- *Australian Defence Doctrine Publication 00.1, Command and Control*
- *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 3-9-1, Operations in Specific Environments*
- *Land Warfare Procedures - General 0-5-1, Staff Officers Guide*
- United States Army, *Field Manual 3-97.6 (90.6), Mountain Operations, November 2000.*

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.

Gender

This publication has been prepared with gender-neutral language.

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Glossary

The principal source for Australian Defence Force terms and definitions is the Australian Defence Glossary located at <http://adj.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.

administration

The management and execution of all military matters not included in tactics and strategy, primarily in the fields of logistics and personnel management.

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.

capability

The power to achieve a desired operational effect in a nominated environment within a specified time and to sustain that effect for a designated period.

Note: It is delivered by systems that incorporate people, organisation, doctrine, collective training, platforms, materiel, facilities, in-service support, and command and management.

combat service support

The support provided to combat forces, primarily in the fields of administration and logistics.

combat supplies

A term applied to ammunition, rations and petroleum, oils and lubricants.

combat team

A combined-arms grouping based upon a manoeuvre sub-unit headquarters.

command

The authority which a commander in the military Service lawfully exercises over subordinates by virtue of rank or assignment.

Notes:

1. Command includes the authority and responsibility for effectively using available resources and for planning the employment of, organising, directing, coordinating and controlling military forces for the accomplishment of assigned missions.
2. It also includes responsibility for health, welfare, morale and discipline of assigned personnel.

control

The authority exercised by a commander over part of the activities of subordinate organisations, or other organisations not normally under their command, which encompasses the responsibility for implementing orders or directives.

Note: All or part of this authority may be transferred or delegated.

desert

Regions of the earth that are characterised by less than 254 millimetres of annual rainfall and an evaporation rate that exceeds rainfall and have high average daily temperatures and low humidity.

effect

The adverse physical, physiological, psychological or functional impact on the enemy as a result, or consequence of, own military or non-military actions.

equipment

All non-expendable items needed to outfit/equip an individual or organisation.

Note: May be qualified by referring to items as major or minor capital equipment.

fighting power

The result of the integration of three interdependent components:

- a. the intellectual component provides the knowledge to fight
- b. the moral component provides the will to fight
- c. the physical component provides the means to fight.

ground-based air defence

Operational node representing land-based force elements responsible for defending from rocket, artillery, mortar, aircraft, unmanned aerial vehicle, helicopter/fixed wing and cruise missile attack.

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.

intelligence

The product resulting from the processing of information concerning foreign nations, hostile or potentially hostile forces or elements, or areas of actual or potential operations.

Note: Also applied to the activity which results in the product and to the organisations engaged in such activity.

joint

Adjective used to describe activities, operations and organisations in which elements of at least two Services participate.

light cavalry

A standing organisation of armour that does not have integral armoured vehicles, which is trained in mounted and dismounted cavalry tactics and is capable of forming combined arms teams.

logistics

The science of planning and carrying out the movement and maintenance of forces.

Note: In its most comprehensive sense, those aspects of military operations which deal with:

- a. design and development, acquisition, storage, movement, distribution, maintenance, evacuation and disposition of materiel
- b. transport of personnel
- c. acquisition or construction, maintenance, operation, and disposition of facilities
- d. acquisition or furnishing of services

- e. medical and health service support.

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.

movement

The activity involved in the change in location of equipment, personnel or stocks as part of a military operation and requires the supporting capabilities of mobility, transportation, infrastructure, movement control and support functions.

networked communications

An organisation of stations capable of direct communications on common channels and/or frequencies that utilise a spread of electronic devices and systems for the acquisition or acceptance, processing, storage, display, analysis, protection and transfer of information. It provides an 'all informed' network of information for decision making and action.

offensive support

Offensive measures taken to support a commander in pursuing this mission, and may be organic to the Service of the supported unit or be provided by another Service, and includes naval surface fire support, fire support from any ground-based weapons system other than small arms, and offensive air support, including air reconnaissance and maritime strike.

platform

A combination of technologies and capabilities that, together, form a complex piece of equipment (for example, self-propelled guns, tanks and ships).

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 meteorological, hydrographic or geographic characteristics of a particular area.

recovery

In battlefield maintenance, the extrication of an abandoned, disabled or immobilised vehicle and, if necessary, its removal to a maintenance point.

reorganisation

The reallocation of personnel and materiel resources within a unit or formation to increase its combat effectiveness to an acceptable level.

repair

The restoration of an item to serviceable condition through correction of a specific failure or unserviceable condition.

replenishment

The positioning of stock to meet a periodic resupply requirement.

shock action

The physical and psychological assault upon enemy troops and their commanders, employing both firepower and mobility of tanks to apply maximum combat power.

supplies

All materiel and items used in the equipment, support and maintenance of military forces.

support

The action of a force, or portion thereof, which aids, protects, complements or sustains any other force.

surveillance

The systematic observation of aerospace, surface or sub-surface areas, places, persons, or things, by visual, aural, electronic, photographic or other means.

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.

sustainment

The enduring provision of the appropriate goods and services required to achieve readiness and sustainability goals for the life of a Defence element.

synchronisation

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

tempo

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

transport

The means of conveyance to move forces, equipment, personnel and stocks.

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.

ABF	attack by fire
ACR	armoured cavalry regiment
AFV	armoured fighting vehicle
ARH	armed reconnaissance helicopter
BG	battlegroup
BMS	battlefield management system
CRV	cavalry reconnaissance vehicle
CT	combat team
EA	engagement area
FE	force element
GBAD	ground-based air defence
HA	humanitarian assistance
HN	host nation
JMAP	joint military appreciation process
MBT	main battle tank
OP	observation post
OS	offensive support
SBF	support by fire
TAOR	tactical area of responsibility
TCP	traffic control post
TF	task force
TI	thermal imager
VCP	vehicle checkpoint

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

AA	armoured ambulance
ACV	armoured command vehicle
AF	armoured fitter
ALV	armoured logistic vehicle
AM	armoured mortar
ARVL	armoured recovery vehicle – light
C4ISR	command, control, communications and computers, intelligence, surveillance, reconnaissance
COIN	counterinsurgency

CWS	commander's weapon station
MG	machine gun
QCB	quick-change barrel

The following are common shortened forms or symbols for names of measurements used throughout this publication.

t	tonne
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The following are common shortened forms or symbols for names of explosives used throughout this publication.

4B1T	four ball, one trace
AP	armour-piercing
APDS-T	armour-piercing discarding sabot with tracer
APFSDS-T	armour-piercing fin stabilised discarding sabot with tracer
HE	high explosive
HEAT	high explosive antitank
HEI-T	high explosive incendiary with tracer
MPAT	multipurpose antitank
MPSD-T	multipurpose self-destruct with tracer

Amendment certificate

Land Doctrine Centre, Army Knowledge Group is responsible for the management of this publication. The sponsor of this publication is Commandant Combined Arms Training Centre. The doctrine contained herein was approved on 11 November 2016.

Proposals for amendments or additions to the text of this publication should be made through normal channels to the sponsor.

It is certified that the amendments promulgated in the undermentioned amendment lists have been made in this publication.

<i>Amendment list</i>		<i>Produced by</i>	<i>Publication amended by</i>	<i>Date amended</i>
<i>Number</i>	<i>Date of endorsement</i>			
1.				
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