

**THE UNITED STATES INFANTRY DIVISION AND THE AUSTRALIAN
PENTROPIC DIVISION--SIMILARITIES AND DIFFERENCES**

**An abstract for a thesis presented to the Faculty of
the U. S. Army Command and General Staff College in
partial fulfillment of the requirements of the
degree of**

MASTER OF MILITARY ART AND SCIENCE

by

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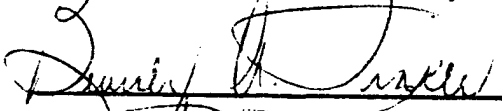
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The opinions and conclusions expressed herein are those of the individual student author and do not necessarily represent the views of either The United States Army Command and General Staff College or any other governmental agency. References to this study should include the foregoing statement.

This comparative analysis of the United States Army Infantry Division and the Australian Army PENTROPIC Division is based on the possibility of these units being deployed as part of a combined force to implement the provisions of the ANZUS treaty. Components of such a combined force would face some unusual operational and environmental challenges. To minimize problems which may arise, it is essential that a mutual understanding of the similarities and the differences of the participating forces be achieved prior to formation of such a combined force. The significant similarities and differences are developed through a comparison and analysis of the organization, equipment, doctrine, procedure, and terminology used by each division. The U. S. infantry division used for comparison with the Australian PENTROPIC division is the type depicted in U. S. Table of Organization and Equipment 7-E, dated 15 July 1963 (2 tank battalions, 8 infantry battalions).

A general comparison of all organic elements of the two divisions is accomplished in the beginning of the thesis. These comparisons are based on personnel strengths of units that perform comparable missions, and includes an explanation of the methods used to control organic elements of each division. This general comparison concludes with a discourse on the organization and operation of the division level staffs. The text in this part of the thesis is supplemented by tables which show a comparison of personnel strengths of major units in each division, and an outline of each division's staff organization.

Combat and combat support elements are compared in detail. Each type element (infantry, signal, etc.) is considered in relation to its

mission, organization, equipment, firepower, communications, and transport. Each type element is compared in turn. Each type element is discussed in the following sequence. First the U. S. unit is discussed, followed by a discussion of a similar Australian unit, and concludes with a comparison and analysis of the differences that exist between the two units. Included are tables depicting the organizational structure, personnel strengths, and major items of equipment belonging to each type of combat and combat support unit organic to each division.

Differences in division level logistical terminology, procedures, and organizations are discussed by examining each division's logistical procedure against the background of the similar logistical functions. The discussion starts with a consideration of U. S. procedures followed by a consideration of the Australian procedures and ends with a comparison and analysis of logistical procedures in both divisions. In addition to the difference in organization of combat service support units, a significant difference in logistical terminology is revealed in this part of the thesis. The need for an understanding of these differences in logistical terminology is suggested as a prerequisite for effective logistical planning required to support a combined U. S. -Australian force.

The discussion of operations doctrine reveals that similar principles, fundamentals, and basic concepts provide guidance for directing the tactical operations of each division. The major difference developed is in terminology used to describe similar tactical actions. This difference in terminology presents a significant problem which must be alleviated prior to operations in a combined force environment.

Significant similarities isolated in the comparison of the two divisions follow. First is the common basic language which simplifies the standardization of operational procedures, detailed coordination, and

understanding of each others problems. Second, the existence of similar tactical doctrine simplifies planning of combined operations. Third, the organic communications systems provide for establishing lateral radio communications between adjacent units at all levels of command from company to division.

Other similarities involve limited combat service support, and staff organization and procedures. The M2A2-105mm howitzer, the M-60 machinegun, the 81mm mortar, the 106mm recoilless rifle, the 3.5 inch rocket launcher, and their spare parts are standard items in both divisions. The U. S. supply system handles all types of ammunition required for the weapons in the Australian infantry battalion and division artillery. The staffs organizations used within each division is different, however, the collective functions performed by each staff are similar. (An exception to this similarity is the staff responsibilities for logistics at the division level.)

Significant differences between the U. S. division and the Australian division are divided into two categories. First, those differences in terminology, procedures, and methods used to control major maneuver elements. Second, those differences in organization that affect each division's capability to move and shoot.

The significant differences in terminology, procedures, and methods used to control major maneuver elements are problems that can be solved by combined planning and mutual understanding. Each of these differences must be considered before an operation involving a combined force of U. S. -Australian divisions can be adequately planned. The paramount requirement prior to operations in a combined force environment is the establishment of standard terms for use by all components of the combined force.

The U. S. infantry division and the Australian division were

organized for different purposes. Consequently, there is a significant difference in the overall combat power and mobility of these two divisions. These differences are also affected by the characteristics of the areas of operations in which they are employed. Therefore, a commander of a combined force of U. S. and Australian divisions must consider these differences in arriving at a decision as to how each division can best be employed.

The key to the successful formation of a combined force consisting of an Australian Army PENTROPIC division and a U. S. Army infantry division is recognizing that there are both significant differences and significant similarities between the two divisions. The combined force commander that recognizes these similarities and differences should have no insurmountable problems in organizing an effective U. S. -Australian combined force.

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INTRODUCTION

This comparative analysis of the United States Army infantry division and the Australian Army PENTROPIC division is based on the possibility of these units being deployed as a combined force to implement the "Security Treaty between Australia, New Zealand and the United States of America".¹ A provision of the ANZUS Treaty states:

Each Party recognizes that an armed attack in the Pacific Area or on any of the Parties would be dangerous to its own peace and safety and declares that it would act to meet the common danger in accordance with its constitutional processes.²

The forming of such a combined force will be assisted by prior knowledge of the compatibility which exists between these forces. This compatibility will be determined by a study of the organization, equipment, doctrine, procedure, and terminology of the two compared divisions.

The objective of this thesis, therefore, is to provide an analysis which will enable commanders and staffs of, and within, a United States - Australian combined force to recognize the significant differences and similarities which exist between the two division structures. Particular attention will be given to those factors which affect operational planning and mutual understanding in a combined force environment. No analysis of relative strengths and weaknesses of either force will be attempted.

Underlying any discussion of the PENTROPIC division is the need to

¹U. S., Department of State, United States Treaties and Other International Agreements, Vol III, Part 3, 1952, p. 3420.

²Ibid., p. 3423.

understand the basis for its organization. The PEN in the title comes from the pentagonal structure of five major maneuver elements. This structure was modeled after the United States Pentomic organization which preceded the current United States organization. The five major maneuver elements in the Australian PENTROPIC division are infantry battalions. These Australian infantry battalions have a fixed organization and are comparable to the United States Pentomic battle group. (Australian infantry battalions are referred to as battle groups when they are reinforced by major combat elements.) The TROPIC in the title stems from the fact that the division is organized primarily for action in Southeast Asia.¹ The extent of this limited outlook on operational environment is illustrated in this statement:

The Australian soldier today enjoys the undoubted advantage of being told that South-East Asia is likely to be his theatre of future operations. The army is being trained and equipped to fight in such a theatre.²

Although Australia has other special purpose organizations, this study assumes that Australia would be represented in a United States - Australian combined force by a PENTROPIC division. Henceforth in this thesis the Australian PENTROPIC division will be referred to as the Australian division.

The Australian division is designed to operate either independently or as part of an allied force. When operating independently the division may be provided additional combat power by allocation of armor, artillery,

¹Australia, Military Board, The Pentropic Division in Battle (Provisional), Part 1, Organization and Tactics, 1960, p. 1.

²S. S. Chakravarti, "Understanding Asia," Australian Army Journal, CLXVI (March, 1963), p. 18.

engineer, and signal units, from the nondivisional combat support group.¹ When operating as part of a larger allied force the combat support group forces would become part of corps troops.² Types of operations range from antiguerrilla campaigns in a cold war situation to engagements with regular military forces in a nuclear environment.³

By comparison, the structure of the United States division is built around a "mix" of combat battalions and three major tactical headquarters (brigades). Each brigade is organized for combat by attaching a variable number of combat battalions to the brigade headquarters. The number and type of attachments is based on the assigned mission.⁴ The United States division may operate independently or in conjunction with other United States or allied forces. Types of operations are the same as for the Australian division. The United States division can be tailored for its mission and environment through the assignment of different mixes of combat battalions.⁵

This thesis assumes an operational environment in Southeast Asia for the combined United States - Australian force. The type infantry division outlined in Table of Organization and Equipment (TOE) 7-E is selected as the United States division, for which there is an official prescribed organization, best suited to operate in the assumed environment.

¹"The Pentropic Division," Australian Army Journal, CXXIX (February, 1960), p. 52.

²The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 3.

³Ibid., p. 2.

⁴U. S., Department of the Army, FM 61-100, The Division, 1962, p. 5.

⁵U. S., Department of the Army, FM 100-5, Field Service Regulations - Operations, 1962, p. 31.

This type United States infantry division has a mix of eight infantry battalions and two tank battalions.

Primary source materials on the United States infantry division are current Army Regulations, Tables of Organization, and Field Manuals. Complete materials on the United States infantry division are available in the United States Army Command and General Staff College library. Source materials on the Australian division are difficult to find in the United States. The primary source materials on the Australian division are a series of manuals published by the Australian Military Board, Army Headquarters, Canberra, Australia. With one exception all of these manuals were loaned to the writer by Lt Col John Langtry, a fellow student from Australia. One Australian manual, Infantry Training, was obtained from the Australian Attache in Washington D. C. through the United States Army Command and General Staff College library. Australian manuals, though small in number, are comprehensive documents which cover in detail organization, administrative procedures, and tactical doctrine. The Australian Army Journal and the 1961-1962 lesson plans published by the Australian Staff College, Queenscliff, Australia (available in USACGSC library) were valuable aids to interpreting the Australian manuals. The Australian Army Journal and the lesson plans proved to be doctrinally accurate when compared to the Australian Army manuals.

CHAPTER I

DIVISION ORGANIZATION

This chapter is devoted to a general comparison of all organic elements of the U. S. infantry division and the Australian division. Comparisons are based on personnel strengths and methods used to control subordinate elements. When the same type units have dissimilar functions, these differences are explained. The chapter concludes with a comparison of the organization and operation of the division level staffs.

From a total strength standpoint the U. S. infantry division is authorized 1,569 more troops than the Australian division. (See Table 1.)

TABLE 1

COMPARISON OF STRENGTHS OF MAJOR UNITS IN THE U. S. INFANTRY AND THE AUSTRALIAN DIVISION

UNITED STATES ^a		AUSTRALIAN ^b	
1. Total Strength	15,594	14,030	Total Strength
2. Headquarters and Headquarters Company	137	243	Headquarters, Infantry Division
3. Headquarters and Headquarters Company, Infantry Brigade (3)	123		
4. Infantry Battalions (8)	830	1,304	(5) Infantry Battalions
5. Tank Battalions (2)	575	449	Armoured Regiment
6. Cavalry Squadron	816	203	Reconnaissance Squadron
7. Division Artillery	2,516	2,135	Division Artillery
8. Aviation Battalion	318	161	Light Aircraft Squadron

TABLE 1--Continued

9. Engineer Battalion	942	804	Divisional Engineers
10. Signal Battalion	575	862	Divisional Signal Regiment
11.		57	Division Intelligence Unit
12. Military Police	189	162	Provost Company
13. Headquarters and Headquarters Company, Support Command	97		
14. Administrative Company	333		
15.		10	Division Cash Office
16.		22	Division Postal Unit
17. Medical Battalion	396	612	Divisional Medical Units
18. Supply and Transport Battalion	425	647	Divisional Column, RAASC
19.		182	Divisional Ordnance Units
20. Maintenance Battalion	691	961	Divisional Units, RAEME

^aU. S., Department of Army, TOE 7-E, Infantry Division, 15 July 1963.

^b"The Pentropic Division," Australian Army Journal, CXXIX, (February, 1960), pp. 8-9. [Infantry Battalion strength modified by Establishment II/320/2, as shown in Australian, Military Board, Infantry Training, Vol IV, Part 1, The Battalion (Provisional), 1961, p. 11.]

As no significant conclusion can be drawn from this broad comparison, a detailed comparison of subordinate elements is offered.

ORGANIC ELEMENTS

DIVISION HEADQUARTERS

The headquarters of the Australian division has 106 more men than the headquarters of the U. S. infantry division. This difference results from the addition of personnel to man a separate task force headquarters,

along with staff advisors. The task force headquarters of the Australian division is primarily used by the "deputy divisional commander" when a task force of two or more battalions is formed for a specific mission.¹ Other uses might be to serve as an alternate division headquarters, supervise major activities, and to reduce the span of control of the division commander.²

Other than this task force headquarters, there are no control elements in the Australian division which compare with the U. S. infantry division brigade headquarters. There are three such brigades in the U. S. infantry division and they provide the major tactical command headquarters subordinate to division. Each brigade headquarters receives varying combinations of combat, combat support, and combat service support units.³ These units may be attached and/or placed in support, based on the brigade mission. Each brigade headquarters and headquarters company has 123 assigned personnel.

INFANTRY

Infantry battalions are the most significant combat units in both the U. S. and the Australian divisions. The Australian division has five infantry battalions of 1,304 men each, giving a total of 6,520 men. Each of these battalions normally operates directly under division control. However, they may operate under control of the task force headquarters.

¹Australia, Military Board, The Pentropic Division in Battle (Provisional), Part 1, Organization and Tactics, 1960, p. 54.

²"The Pentropic Division," Australian Army Journal, CXXIX, (February, 1960), p. 49.

³U. S., Department of the Army, FM 7-30, Infantry, Airborne Infantry, and Mechanized Infantry Brigades, 1962, p. 4.

The Australian infantry battalion becomes a battle group with the addition of such units as field artillery, armor, and aviation under its command.^{1,2}

In the U. S. infantry division there is a total infantry strength of 6,640 men. These infantrymen are assigned to eight battalions of 830 men each. Infantry battalions normally operate directly under control of one of the three brigade headquarters.³

ARMOR

The Australian division has an armored regiment and the reconnaissance squadron. There are 449 men in the armored regiment and 203 men in the reconnaissance squadron. Total armored strength in the Australian division is 652 men.⁴ Armored units may be employed directly under division headquarters, or they may be allocated to support other elements of the division.

Armor in the U. S. infantry division consists of three combat units: two tank battalions of 575 men each, and the cavalry squadron of 816 men. Total armored strength in the U. S. infantry division is 1,966 men. The tank battalion in the U. S. infantry division is normally employed under control of the brigade headquarters. The cavalry squadron may be employed directly under control of division headquarters, or it may be attached in whole or in part to one of the brigades.

¹"Command and Grouping for Battle in the Pentropic Division," Australian Army Journal, CXXXV, (August, 1960), p. 5.

²The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 56.

³U. S., Department of the Army, FM 61-100, The Division, 1962, p. 28.

⁴Australian Army Journal, loc. cit., CXXIX, p. 14.

ARTILLERY

Division artillery in the Australian division has 2,135 men, organized into five field regiments that provide light artillery support (105mm) for the division.

The U. S. division has 2,516 artillerymen. Division artillery consists of three light artillery battalions (105mm), one medium artillery battalion (155mm), and one composite battalion of heavy artillery (8 inch and Honest John rocket).

Control of artillery is similar in both divisions, the most desirable method being centralized control through division artillery headquarters. If the situation warrants, each division can decentralize control by attaching artillery to the supported element.¹

AVIATION

Organic aviation support for the Australian division is provided by a light aircraft squadron of 161 men. Its primary mission is to provide rapid liaison and reconnaissance.² This squadron is controlled by division headquarters.

The U. S. infantry division's aviation battalion has 318 men. The aviation battalion's support to division includes limited airlift (assault elements of one dismounted infantry company in one airlift using organic aircraft), and limited aerial resupply.³ This battalion is normally

¹Australia, Military Board, The Pentropic Division in Battle (Provisional), Part 5, Artillery, 1961, p. 16.

²Australian Army Journal, loc. cit., CXXIX, p. 47.

³U. S., Department of the Army, FM 1-15, Aviation Battalion, Infantry, Airborne, Mechanized and Armored Divisions, 1961, p. 1.

controlled by division headquarters. Subordinate elements of the aviation battalion may be either attached to or placed in support of other elements of the division for specific missions.

ENGINEERS

The 804 engineers in the Australian division are organized under a Headquarters Royal Australian Engineers (Hq RAE). Subordinate elements are organized into five combat engineer support units, and one unit to provide centralized backup of heavy equipment.

The U. S. infantry division has one engineer battalion. Subordinate elements are organized into four combat engineer support units; one unit to provide centralized backup of heavy equipment and engineer equipment repair, and a separate bridge unit which has the capability of providing 144 meters of class 60 bridge.¹

Control of the divisional engineers is similar in both armies. Whenever possible, centralized control is exercised through the respective division engineer headquarters. Combat engineers units normally are placed in support of committed combat elements. If centralized control is not feasible, each division can attach the engineer unit to the supported combat element.

SIGNAL

The signal regiment of the Australian division and the signal battalion of the U. S. infantry division provide essentially the same functions for their respective divisions.

¹U. S., Department of the Army, FM 5-135, Engineer Battalion, Armored, Mechanized, and Infantry Divisions, 1961, p. 54.

There are 287 more men in the Australian signal regiment than in the U. S. signal battalion. The primary reason for this difference is that troops from the Australian signal regiment are allocated to support infantry battalions, division engineers, and artillery units supporting infantry battalions.¹ These personnel, allocated from the signal regiment, perform the same duties as communications personnel organic to the corresponding combat and combat support units in the U. S. infantry division.

MILITARY POLICE

Functions performed by the military police company in the U. S. infantry division are essentially the same as those performed by the provost company in the Australian division.² The 27 man differential in favor of the U. S. military police company is offset in the Australian division by each infantry battalion performing limited military police duties with assigned personnel.

Centralized control of military police in each division is maintained through the respective company headquarters. Military police are placed in support of elements of each division as needed.

SUPPORT COMMAND

In the U. S. division the support command is a new unit. This command places the logistics support for the division under centralized control. The support command commander has the operational responsibility for division logistical support. He fulfills this responsibility through the functions of headquarters and headquarters company support command,

¹Australian Army Journal, loc. cit., CXXIX, p. 28.

²FM 61-100, op. cit., p. 55.

medical battalion, supply and transport battalion, and the maintenance battalion.¹ Additionally the support command commander has limited responsibility for the division administrative company. Unlike their counterpart Australian commanders, none of the combat service support unit commanders within the U. S. support command have a special staff responsibility.

In the Australian division functions similar to those of the U. S. support command are handled by the administrative branch of the division staff, and the divisional combat service support units.² The combat service support unit commanders perform a secondary role as staff advisors in their fields of interest.

Administrative Company

The U. S. division administrative company with 333 men is organic to the support command. The support command commander's responsibilities for this unit are limited to unit administration, tactical training and tactical operations. This company is under the general staff supervision of the division G1, and is a holding company for the special staff sections.

There is no counterpart in the Australian division for the administrative company. Many of the personnel functions centralized in the U. S. administrative company are decentralized to other headquarters in the Australian division. Advisors to the Australian division staff (other than unit commanders) who perform the same functions as U. S. special staff officers are assigned to the headquarters of the Australian division.³

¹U. S., Department of the Army, FM 54-2, Division Logistics and Support Command, 1961, p. 10.

²Australia, The War Office, Staff Duties in the Field, 1956, p. 103.

³Above, pp. 6-7.

Two separate units in the Australian division, the division cash office and the division postal unit, perform services similar to those performed by the finance and adjutant general sections of the U. S. administrative company.

Medical Battalion

Division level medical service in the U. S. infantry division is provided by a medical battalion of 318 men. This includes evacuation of casualties from unit medical facilities, treatment of patients, first and second echelon medical equipment maintenance, and medical supply.

In the Australian division there are three identical medical units called "field ambulances."¹ Each of these units has the capability of collection, treatment, and evacuation of the sick and wounded. The field ambulance has 204 men for a total strength of 612 in all medical units. These field ambulances are commanded by the Assistant Director of Medical Service (ADMS). The ADMS and his staff are organic to division headquarters. In addition to commanding these units, the ADMS is the division medical advisor.

Supply and Transport Battalion

The U. S. supply and transport battalion of 425 men is responsible for all items of division supply except, cryptographic items, medical items, ammunition, spare parts, and aircraft parts. This unit maintains a reserve of class I and class III supplies, stocks fast moving items of class II and IV supplies, and controls the replenishment of class V supplies.

¹Australia, Military Board, The Pentropic Division in Battle (Provisional), Part 2, Administration, 1961, p. 61.

Based on functions performed, there are two units in the Australian division to compare with the U. S. supply and transport battalion. They are the "divisional column, Royal Australian Army Service Corps" (RAASC), and the divisional Royal Australian Army Ordnance Corps (RAAOC). These two units have 404 more men than does the U. S. supply and transport battalion. Commanders of the Australian units are also advisors to the division headquarters. Normally they each receive instructions from and make recommendations to the division staff. The RAASC is responsible for collecting all types of supplies from the rear and delivering them to forward positions. This unit is responsible for holding the division's second line stocks" (supply reserves).¹ RAAOC units are responsible for holding spare parts, holding of "general stores" (clothing), providing bath service, and establishing a division salvage collecting point.²

Maintenance Battalion

The maintenance battalion of 691 men in the U. S. infantry division is responsible for direct support maintenance for all equipment except cryptographic, electrical accounting, and medical items. Spare parts supply, equipment evacuation, and establishment of maintenance collection points are functions of this battalion. A special company in the maintenance battalion provides maintenance and spare parts for the aviation units of the division.³

Repair and recovery of equipment, except engineer and signal items, within the Australian division is the responsibility of divisional units of the Royal Australian Electrical and Mechanical Engineers (RAEME).

¹Ibid., p. 53.

²Ibid., p. 74.

³FM 54-2, op. cit., p. 25.

Elements of RAEME, called light aid detachments (LAD), are attached to combat and combat support units of the division to provide unit repairs and recovery.¹ Backup field repairs and recovery are provided by three types of workshops: division light aircraft company, infantry, and transport company.² The commander of RAEME is the advisor for his service to the division headquarters. He advises and receives instruction from the division staff.

INTELLIGENCE UNIT

The Australian division has an organic intelligence unit of 57 men. This unit assists the division staff on intelligence matters. The commander of the unit is the intelligence officer of the division staff.³

There is no comparable organic unit in the U. S. infantry division. A divisional military intelligence detachment of 61 men will be attached when the division is deployed in an active theater.⁴

STAFFS AND THEIR EMPLOYMENT

There are sufficient differences in the organization of the respective division staffs to require further study prior to continuing with a more detailed comparison of units of the two divisions (see Table 2 and 3).

Terms used in describing the employment of the division staff in

¹The Pentropic Division in Battle (Provisional), Part 2, op. cit., p. 81.

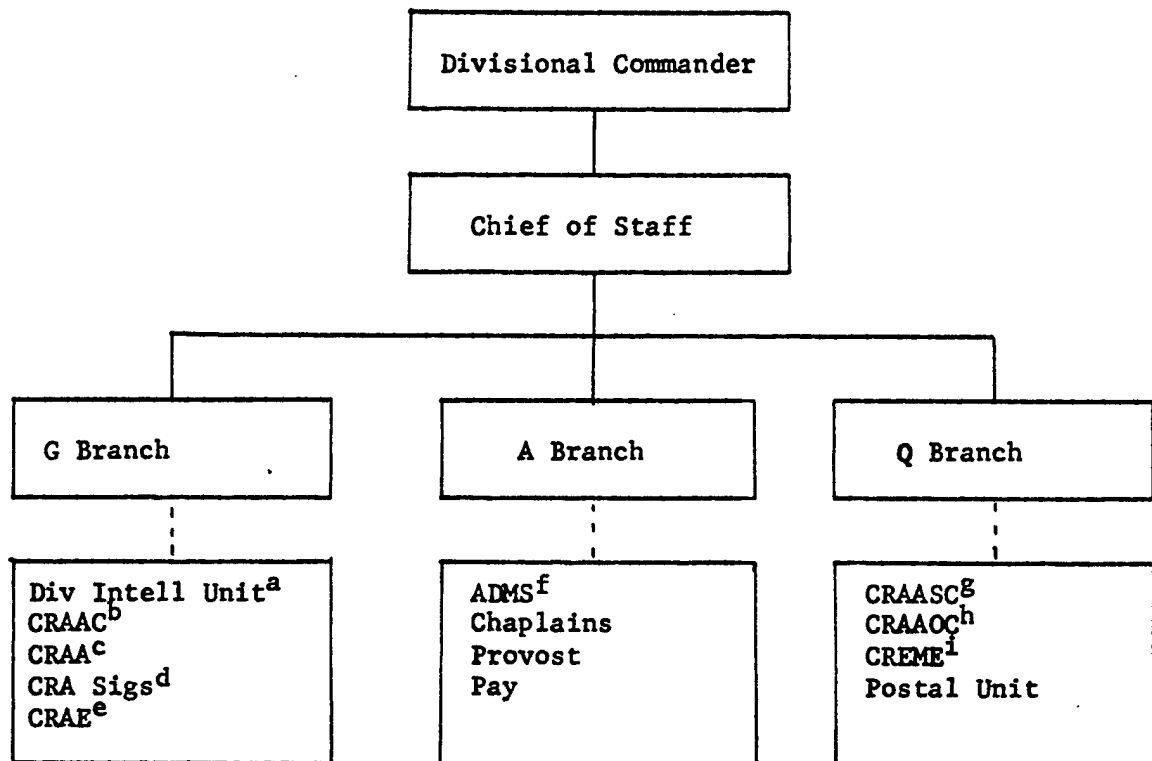
²Australian Army Journal, loc. cit., CXXIX, p. 39.

³Ibid., p. 29.

⁴U. S., Department of Army, TOE 30-17E, Military Intelligence Detachment, Divisional, 1963.

TABLE 2

**AUSTRALIAN DIVISION, OUTLINE STAFF ORGANIZATION,
SHOWING MAJOR AREAS OF STAFF SUPERVISION**



^aCommanded by intelligence officer that is assigned to G branch.

^bCommander of Royal Australian Armoured Corps

^cCommander of Royal Australian Artillery

^dCommander of Royal Signals

^eCommander of Royal Engineers. May be coordinated by Q branch for administrative functions -- staff supervision

^fAssistant Director of Medical Services

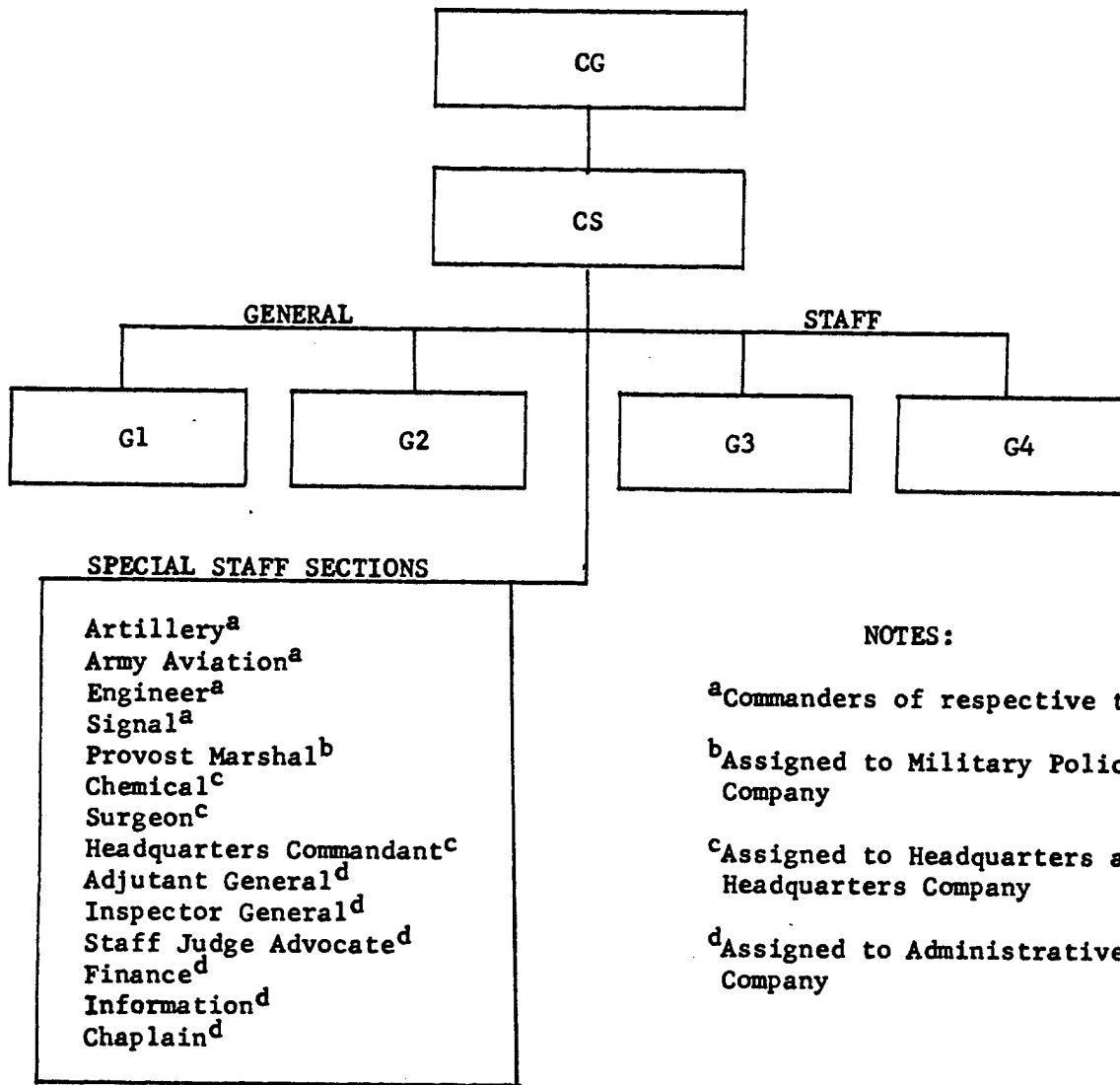
^gCommander of Royal Australian Army Service Corps

^hCommander of Royal Australian Army Ordnance Corps

ⁱCommander of Royal Australian Army Electrical and Mechanical Engineers

TABLE 3

U. S. INFANTRY DIVISION, OUTLINE STAFF ORGANIZATION



echelons are the same for both the U. S. and the Australian division. Confusion may result in that these terms denote different things in each division.

The main command post denotes a grouping of functions which are similar in both divisions. However, there is no doctrine for establishing a tactical operations center as part of the Australian division main command post.

The rear command post in the U. S. infantry division includes those elements of the division staff not required at the division main. Combat service support units and installations of the U. S. infantry division are located in the division support area. These combat service support units are controlled through the command post of the U. S. support command. In the Australian division, the rear command post includes those elements of the division staff not required at division main. The Australian division rear command post is normally located in the vicinity of, and controls, the division's combat service support units and installations (administrative area).

Each division is capable of establishing a tactical command post when the situation indicates a need for that echelon. The functions of the tactical command post are similar in each division.

GENERAL STAFF

In each division "the purpose of the division staff is to assist the . . . commander in the exercise of command."^{1,2} Each division has a

¹FM 61-100, op. cit., p. 10.

²The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 49.

chief of staff who is responsible to the division commander for the coordination of all staff effort within the division headquarters. Here the similarities within the division staffs cease.

The U. S. infantry general staff consists of the following: an assistant chief of staff G1, who is the principal staff assistant for personnel matters; an assistant chief of staff G2, who is the principal staff assistant for intelligence matters; an assistant chief of staff G3, who is the principal staff assistant for organization, training and operations matters; an assistant chief of staff G4, who is the principal staff assistant for matters of logistical planning; and may be augmented with an assistant chief of staff G5, who would be the staff assistant for civil affairs.¹

Within the Australian division the staff consists of the following: a general staff or G branch, responsible for staff duties, intelligence, operations, training, and setting up of the radiological center; an adjutant general's staff or A branch, responsible for personnel services and administration, and manpower; a quartermaster general's staff or Q branch, responsible for supply matters and civil affairs.² The A and Q branches are collectively referred to as the administrative staff. The intelligence officer (IO) on the G branch is also the commander of the division intelligence unit.³

Notwithstanding the differences in organization of the two general staffs, the major difference in the collective functions is in the field

¹U. S., Department of Army, FM 101-5, Staff Officers Field Manual - Staff Organization, 1961, p. 21.

²Australia, The War Office, Staff Duties in the Field, 1956, p. 102.

³Above, p. 15.

of logistics. The officer in charge of Q branch of the Australian general staff is responsible for logistical planning and operations. In the U. S. division the G4 is responsible for logistics planning, and the commander of the support command is responsible for logistics operations.

SPECIAL STAFF

In each division the armor, artillery, engineer, and signal commanders have a dual role. First they are commanders of their respective troops, and second they are advisors to the division commander. In the U. S. infantry division they are called special staff officers. In the Australian division they are called arms advisors. The aviation battalion commander in the U. S. infantry division also serves as a special staff officer. There is no comparable aviation staff position in the Australian division.

The administrative company in the U. S. infantry division is the carrier unit for the following special staff officers: the adjutant general, the staff judge advocate, the information officer, the chaplain, and the finance officer. Comparable activities within the Australian division are accomplished as follows: functions of the adjutant general, inspector general, staff judge advocate, and information officer are performed by personnel assigned to or supervised by the A branch of the staff; chaplains are organic to the division headquarters; functions of the finance officer are performed by the division cash office, and supervised by the A branch of the staff.

The U. S. infantry division headquarters and headquarters company contains three other special staff officers. They are the chemical officer, the surgeon, and the headquarters commandant. In the Australian division the chemical officer's duties are performed by the nuclear,

biological and chemical (NBC) officer organic to the G branch of the staff. The surgeon's advisory functions are performed by the ADMS who is a representative of the medical service organic to the division headquarters. The ADMS also has a staff and commands the RAAMC units within the division.¹ The headquarters commandant functions are performed by the divisional headquarters commander.

The provost marshal and his special staff section are assigned to the military police company in the U. S. infantry division. The provost marshal is assigned to the Australian division headquarters as an advisor for his service.

Staff advice on supply operations within the U. S. infantry division is furnished by the support command commander. In the Australian division, logistical advisors are the commanders of the combat support units, RAASC, RAAOC, and RAEME. Each of these commanders have access to the division commander and chief of staff, but normally work through the Q branch of the staff.

¹Above, p. 13.

CHAPTER II

COMBAT ELEMENTS

This chapter sets forth a comparison of the combat elements of the U. S. infantry division and the Australian division. Combat elements consist of infantry, tank, and reconnaissance units. Each type is considered as to its mission, organization, equipment, firepower, communications, and transport.

INFANTRY

The basic combat element in both divisions is the infantry battalion.

U. S. INFANTRY BATTALION

Mission

"The mission of the [U. S.] infantry battalion is to close with the enemy by means of fire and maneuver in order to destroy or capture him or to repel his assault by fire, close combat, and counterattack."¹

Organization

The U. S. infantry battalion is organized with a headquarters and

¹U. S., Department of the Army, FM 7-20, Infantry, Airborne Infantry, and Mechanized Infantry Battalions, 1962, p. 4.

headquarters company and three rifle companies. (See Table 4.) The battalion is commanded by a lieutenant colonel and companies are commanded by captains. The headquarters company contains a combination of control elements (battalion headquarters, battalion headquarters section, and company headquarters), combat support elements (ground surveillance section, mortar platoon, reconnaissance platoon, antitank platoon, and communications platoon), and combat service support elements (maintenance platoon, medical platoon, and support platoon). Each rifle company contains a headquarters, a weapons platoon, and three rifle platoons.

Though the infantry battalion has a fixed table of organization, the brigade commander may organize the battalion for combat by detaching and/or attaching units. For example, assume that a brigade has been formed with two infantry battalions and a tank battalion. The brigade commander could form three battalion tank - infantry task forces by cross attachment of tank and rifle companies. Battalion task forces, in turn, may form company teams by cross attachment of platoons.

The U. S. infantry battalion is the lowest command echelon in the U. S. infantry division with an assigned staff. This staff is tailored along the lines of the division staff. The commander's primary assistant and staff coordinator is the executive officer (major). The remaining principal staff officers are the S1, S2, S3, and S4 (S3 major, others captains), whose functions are similar to those of the division G1, G2, G3, and G4, respectively.¹

¹Above, pp. 18, 19.

TABLE 4

U. S. INFANTRY BATTALION^a

	HEADQUARTERS AND HEADQUARTERS COMPANY ^b											RIFLE COMPANY(3) ^c				TOTAL
	Bn Hq	Co Hq	Grd Survl Sec	Mortar Plat	Recon Plat	Antitank Plat	Maint Plat	Med Plat	Support Plat	Commo Plat	TOTAL	Hq Co	Rifle Plat(3)	Weapons Plat	TOTAL	
Personnel																
Officers	11	2	0	1	1	1	1	2	2	0	21	2	1	1	6	39
Enlisted Men	25	5	19	42	31	17	23	32	51	24	269	10	43	35	174	791
Vehicles																
1/4 ton	5		5	5	7	1	1	7	1	6	40	2		3	5	55
3/4 ton	6	1	2	6	1	3	2		1	5	27			4	4	39
2-1/2 ton	1	1					3	1	10		16	1			1	19
5 ton							1		2		3					3
Weapons																
.50 MG		3							10		13					13
7.62mm MG					5		1		1		7		2		6	25
81mm Mortar														3	9	9
4.2 in. Mortar				4							4					4
106mm RR					2						2			2	2	8
3.5 in. RL	2	1		1			2		1	1	8	1		2	3	17
90mm Rifle													2		6	18
ENTAC - 1						3					3					3

^aU. S., Department of Army, TOE 7-15E, Infantry Battalion, Infantry Division, 15 July 1963.

^bU. S., Department of Army, TOE 7-16E, Headquarters and Headquarters Company, Infantry Battalion, Infantry Division, 15 July 1963.

^cU. S., Department of Army, TOE 7-18E, Rifle Company, Infantry Battalion, Infantry Division, 15 July 1963.

Equipment

The unit distribution of vehicles and crew-served weapons authorized for the U. S. infantry battalion are shown in Table 4. There is a diversification in the type of equipment in the U. S. infantry battalion. Vehicles are divided into four classes, ranging from the quarter-ton to the five-ton class. Crew-served weapons show the capability of the U. S. infantry battalion to deliver a variety of fires. These weapons include two types of machineguns, two types of mortars, and four types of antitank weapons.

Firepower

The firepower delivery potential of the U. S. infantry battalion is shown in Table 5.

TABLE 5

U.S. INFANTRY BATTALION FIREPOWER DELIVERY POTENTIAL

Type Weapon	Weapons per Battalion ^a	Rifle Platoons per Battalion	Weapons per Rifle Platoon ^b
Individual	360	9	40
Machinegun	18	9	2
Mortar	13	9	1.4
Antitank	38	9	4.2

^aOrganic to, or employed to support, rifle platoons.

^bThis ratio is established to enable a later comparison with the Australian rifle platoon.

The forty individual weapons per U. S. rifle platoon include

twenty-four 7.62mm M-14 semiautomatic rifles, six 7.62mm M-14 automatic rifles with bipods, six 40mm M-79 grenade launchers, and four .45 caliber pistols. Individual arms (.45 caliber pistols) carried by gunners on the machineguns and antitank rifles are not included.

Of the thirty-eight machine guns in the U. S. infantry battalion, only eighteen were shown in Table 5. The twenty machineguns organic to headquarters company were not included because normally they do not support rifle platoons.

All mortars of the battalion were considered because they are employed normally to support the rifle platoons.

The eight 3.5 inch rocket launchers in the headquarters company were not included in the antitank weapons portion of Table 5 because they are employed normally as local defense weapons and do not support rifle platoons.

Communications

All means of signal communication are used within the U. S. infantry battalion; the primary means being telephone and radio. For the purpose of this study it is sufficient to say that the battalion has the capability of establishing telephone communications with all operating elements when in a relatively static position. A more detailed evaluation is necessary for radio.

The U. S. infantry battalion establishes external radio communications by operating in the following nets: the brigade command net (voice), the brigade command net (voice, continuous wave, radio teletypewriter), and the division air request net (continuous wave). The battalion monitors the

division warning/broadcast net (voice).¹ Radios and operators for the above nets are organic to the U. S. infantry battalion.

Internal radio communications are maintained within the U. S. infantry battalion with two FM voice nets, the battalion command net, and the battalion logistical net. The battalion command radio net connects the battalion commander, staff officers, and commanders or leaders of all combat and combat support elements subordinate to the battalion headquarters. The battalion logistical radio net provides communications for combat service support activities throughout the battalion. All radios in these battalion nets are vehicular mounted, have a frequency span of 30 to 76 megacycles, and a rated operating range of 32 kilometers.²

Below the battalion level separate command radio nets are established to control operations by rifle companies, antitank platoon, mortar platoon, reconnaissance platoons, and ground surveillance section. Each of these nets has both vehicular mounted and back-pack radios. Both types are voice radios which have a frequency span of 30-76 megacycles. The maximum operating range for the mounted radio is 32 kilometers, for the back-pack radio (AN/PRC 25) 8 kilometers.

Within the rifle company there are four separate radio nets in addition to the command net. These are: a fire direction net for the mortars, and three rifle platoon nets. These nets use portable radios. The AN/PRC 35 radio, which has one pre-set frequency, and a maximum operating range of 1.6 kilometers, is used in the rifle platoon net.³

¹FM 7-20, op. cit., pp. 343 and 344.

²U. S., Army Infantry School, Infantry Reference Data, ROAD, (Fort Benning, Georgia: 1962), p. 256.

³Ibid., p. 255.

Transport

There is one organic vehicle per 7.15 men (116 vehicles-830 men) in the U. S. infantry battalion. The 116 vehicles are assigned for specific jobs which preclude their availability for primary troop transport. Of the 55 quarter-tons, 34 are communications vehicles, 8 are carriers for 106mm recoilless rifles, and 6 are ambulances. Of the 39 three-quarter tons, 15 are communications vehicles, and 19 are weapons carriers. One of the two and a half tons is a van with radios. After accounting for the 83 special purpose vehicles listed above, there are 33 vehicles remaining for logistics support of the battalion.

Additional transportation (21-2½ ton trucks) is required to motorize the rifle companies of the battalion.

AUSTRALIAN INFANTRY BATTALION

Mission

"The mission of the [Australian] infantry battalion is to close with the enemy to kill or capture him, to seize and hold ground and repel attack, by night or day, regardless of season, weather or terrain."¹

Organization

The Australian infantry battalion is organized with a headquarters, an administrative company, a support company and five rifle companies. (See Table 6.) The battalion is commanded by a colonel and companies are commanded by majors. The administrative company contains a headquarters and combat service support elements (a medical platoon and a quartermaster

¹Australian, Military Board, Infantry Training, Vol IV, Part 1, The Battalion, (Provisional), 1961, p. 2.

platoon). The support company is made up of a headquarters and combat support elements (signal platoon, mortar platoon, antitank platoon, and assault pioneer platoon). Each rifle company has a headquarters, a weapons platoon and four rifle platoons.

TABLE 6

AUSTRALIAN INFANTRY BATTALION^a

	Bn Hq	Administrative Company				Support Company						Rifle Company				Bn Total
		Co Hq	Med Plat	QM Plat	Co Total	Co Hq	Sig Plat	Mortar Plat	Antitank Plat	Aslt Pnr	Co Total	Co Hq	Wpn Plat	Rifle Plat(4)	Co Total(5)	
Personnel																
Officers	9	1	2	3	6	1	2	2	1	1	7	2	1	1	7	57
Other Ranks	36	9	52	43	104	12	35	36	14	40	137	15	23	39	194	1247
Vehicles																
3/4 ton Wpn Carriers	7	2	8	5	15	2	3	4		5	14	4	2		6	66
						1		1	4		6	2			2	16
Weapons																
7.62 MG	4	2			2	2	1	1	4	5	13	2		4	18	109
81mm Mort								6			6		2		2	16
106mm RR									4		4					4
3.5 in. RL													3		3	15

^aAustralia, Military Board, Infantry Training, Vol IV, Part 1, The Battalion (Provisional), 1961, p. 11.

The Australian infantry battalion is employed as a unit. It may become a battle group if major combat, or combat support elements are placed "under command" of the battalion commander. When operating as a battle group, combat or combat support units may be allocated to the rifle companies, but rifle companies normally are not detached from their parent

battalion.

The Australian battalion is the lowest echelon of command in the Australian division with an organic staff. Battalion staff positions are similar to those on the Australian division staff. The commander's primary assistant and staff coordinator is the executive officer (lieutenant colonel). The battalion staff has two principal divisions; a G branch supervised by the General Staff Officer grade 2 (GS02), and an AQ branch supervised by the Deputy Assistant Adjutant (DAA) and Quartermaster General (QMG). Both the GS02 and the DAA and QMG staff officers are majors. The G branch is responsible for operation and intelligence matters. There are three officer assistants to the GS02: one for operations, one for intelligence, and one for liaison. The AQ branch is responsible for administration and logistics matters. There are four officer assistants to the DAA and QMG: an adjutant, an assistant adjutant, a quartermaster and an assistant quartermaster.

Equipment

The unit distribution of vehicles and crew-served weapons authorized for the Australian infantry battalion are shown in Table 6. Equipment has been kept to a minimum in this battalion. There are two types of vehicle and four different crew-served weapons. All crew-served weapons organic to the Australian infantry battalion are of U. S. design and fire the same ammunition as weapons organic to the U. S. infantry battalion.

Firepower

The firepower delivery potential of the Australian battalion is shown in Table 7.

TABLE 7

AUSTRALIAN INFANTRY BATTALION
FIREPOWER DELIVERY POTENTIAL

Type Weapon	Weapons per Battalion ^a	Rifle Platoons per Battalion	Weapons per Rifle Platoon ^b
Individual	720	20	36
Machinegun	80	20	4
Mortar	16	20	0.8
Antitank	19	20	0.975

^aOrganic to, or employed to support, rifle platoons.

^bThis ratio is established to enable a later comparison with the U. S. rifle platoon.

The standard type individual weapon of the Australian rifle platoon is the 7.62mm L1A1 rifle.¹ This rifle is similar to the U. S. M-14 in that it is semiautomatic and fires the standard NATO (7.62mm) ammunition. Otherwise, it is of different design than the U. S. M-14 rifle.

Of the 109 machineguns in the Australian infantry battalion, only eighty were shown in Table 7. Machineguns organic to the rifle company headquarters, the battalion headquarters, the administrative company, and the support company were not included because normally they do not support rifle platoons. All mortars and antitank weapons of the battalion were included because normally they do support rifle platoons.

¹"Equipment for the Pentropic Division," Australian Army Journal, CXXXIV (July, 1960), p. 9.

Communications

The Australian battalion uses all means of signal communications but relies primarily on radio, as does the U. S. infantry battalion. Telephone equipment is available for installation in the Australian battalion but "line is kept to a minimum."¹ Radio communications nets generally parallel those of the U. S. infantry division.

The Australian infantry battalion operates in the following division nets: command net (voice), administrative net (voice, continuous wave), command net (continuous wave), intelligence net (continuous wave) and the air request net (continuous wave). The battalion monitors the division warning/broadcast net (voice).² Radios and operators for these division nets are organic to the signal troop supporting the infantry battalion.

For its primary internal communications, the Australian infantry battalion operates a command net using the portable AN/PRC 10 radio with a frequency span of 38 to 54.9 megacycles and a maximum range of 8 kilometers. A second net for long range communications can be established with the HF-A510 portable radio, which has a frequency span of 2 to 10 megacycles and a maximum range in excess of 80 kilometers.³ Mortar fires within the battalion are controlled by a separate fire direction net, using the AN/PRC 9 radio. This radio is the same as the AN/PRC 10 except for frequency span, which is 27 to 38.9 megacycles.

The Australian rifle company command net uses the C/PRC 26D

¹"The Pentropic Division," Australian Army Journal, CXXIX, (February, 1960), p. 14.

²The Pentropic Division in Battle (Provisional), Part 2, Administration, 1961, p. 223.

³Australia, Military Board, Infantry Training, Vol IV, Part 1, The Battalion (Provisional), 1961, p. 66.

portable radio with a frequency span of 50 to 51 megacycles and a range of 2 kilometers.¹ The platoon command net uses the one way pocket radio AN/PRC 34.²

Transport

There is one organic vehicle per 16 men (82 vehicles-1,304 men) in the Australian infantry battalion. The 16 weapons carriers are the same as the U. S. Army mechanical mule. The other 66 vehicles are three-quarter ton trucks (Australian design, which is drastically different from the U. S. three-quarter ton truck).³ Of these 82 vehicles, approximately 35 are available for logistical support of the battalion. Additional transportation (45-2½ ton trucks) is required to motorize the rifle companies of the battalion.

COMPARISON AND ANALYSIS

In any comparison of the U. S. infantry battalion with the Australian infantry battalion it must be remembered that there are eight infantry battalions in the U. S. infantry division and five in the Australian division.

Mission

The mission of the U. S. infantry battalion and the mission of the Australian battalion are fundamentally the same. Each defines the two

¹Ibid., p. 14, p. 66.

²Australian Army Journal, CXXIX, loc. cit.

³Australian Army Journal, CXXXIV, loc. cit.

basic requirements for infantry, attack and defense. The U. S. infantry battalion's mission elaborates on the "how" as well as the "what". The Australian infantry battalion's mission concentrates on the "what."

Organization

Although both infantry battalions are organized to perform their respective missions or tasks under a wide variety of extremes in climatic conditions and types of terrain, the Australian infantry battalion is organized primarily for tropical operations.

Differences between the U. S. and Australian infantry battalions must be evaluated with these facts in mind: "Changes in [U.S.] organization and equipment are dependent upon the characteristics of the proposed area of operations. In general, the more undeveloped the area, the more changes will be required."¹ Basically, each infantry battalion fights as a dismounted unit; however, it can participate in motorized, mechanized, airmobile, or amphibious operations, when appropriate transportation is provided.

From an organization standpoint, the U. S. infantry battalion is easier to control than is the Australian battalion. This is because there are only four companies organic to the U. S. infantry battalion, as compared to seven organic companies in the Australian battalion. This pattern continues within the rifle companies, the Australian rifle company commander having one more rifle platoon than does the U. S. rifle company commander. In the other battalion elements it is a different story. The U. S. infantry battalion headquarters company has seven platoons and one section (both

¹U. S., Department of the Army, FM 31-30, Jungle Operations, 1960, p. 3.

combat, and combat support elements), while the Australian administrative company has only two platoons (combat service support), and the Australian support company has four platoons (combat support). Commanders of the Australian infantry battalion, and rifle companies are one grade higher in rank than comparable commanders in the U. S. infantry battalion. Although this differential in rank may be justified by additional responsibility inherent with more individuals, rank alone does not simplify the problem of control.

Control is facilitated in both battalions by a staff which assists the commander. Though each staff is organized differently, each contributes equally to the accomplishment of the respective battalion's mission or task.

Equipment

In the Australian infantry battalion there is less heavy equipment than in the U. S. infantry battalion. Also, there are fewer types of equipment in the Australian infantry battalion. This equipment has been selected for operations in Southeast Asia where "one of the major characteristics . . . is the lack of land communications."¹ This light equipment decreases the logistics problems inherent in jungle operations. In the U. S. infantry battalion the heavier equipment provides for more diversified firepower, longer range communications, and greater tonnage carrying capacity. These advantages will decrease in proportion to the reduction in heavy equipment which might be required for jungle operations.

Similarities in the types of weapons used in both the U. S. and

¹The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 10.

Australian infantry battalions are significant. All crew-served weapons in the Australian infantry battalion are of U. S. design, and like items are organic to the U. S. infantry battalion. This is the result of a basic agreement to adopt a maximum number of standard items.¹ Standardization is not complete, since the basic rifles are different. It is important to recognize, however, that although the rifles themselves differ, they both use the NATO 7.62mm round. It is therefore concluded that ammunition for all Australian infantry battalion weapons could be furnished through normal U. S. class V supply channels.

Firepower

The firepower delivery potential for the U. S. infantry battalion and the Australian infantry battalion is shown in Table 8.

TABLE 8

U. S. AND AUSTRALIAN RIFLE PLATOON FIREPOWER DELIVERY POTENTIAL

Type Weapon	U. S. ^a Wpn/Rifle Platoon	Australian ^b Wpn/Rifle Platoon
Individual	40	36
Machinegun	2	4
Mortar	1.4	0.8
Antitank	4.2	0.975

^aAbove p. 25.

^bAbove p. 31.

The rifle platoon was selected for comparison because it has approximately the same size and mission in both battalions. There is no

¹Australian - United States, Military Standardization Agreement, Memorandum of Understanding Between the Armies, 1962, p. 1.

significant difference in the number of individual weapons in the respective U. S. and Australian rifle platoons. Note that the M-14 rifles with an automatic capability and the M-79 grenade launchers are included in the individual weapons figure, for the U. S. rifle platoon.¹

The Australian rifle platoon has twice the number of machineguns of the U. S. rifle platoon. This differential in machinegun firepower is offset by the six automatic M-14 rifles in the U. S. rifle platoon.

A significant difference appears in a comparison of the available mortar firepower. The U. S. rifle platoon has an advantage in having approximately twice the number of mortars available for support. It also has a maximum range advantage. The range capability of the 4.2 inch mortar in the U. S. battalion mortar platoon is 5,500 meters as compared to the 3,650 meters range of the 81mm mortar in the Australian infantry battalion.²

Further differences appear in the comparison of antitank weapons available to support each rifle platoon. There are four types of antitank weapons organic to the U. S. infantry battalion as compared to two types in the Australian infantry battalion. The U. S. rifle platoon has four times more antitank weapons than does the Australian rifle platoon. This wide variance in capability is explained by the fact that a major tank threat is not expected in jungle operations.

From the above facts it is concluded that: there is no significant difference in the firepower available to either the U. S. or Australian rifle platoon, when individual weapons and machineguns are considered. There is a significant advantage in favor of the U. S. rifle platoon when

¹Above, p. 26.

²U. S. Army Infantry School, Leaders Handbook, (Fort Benning, Georgia, July, 1962), p. 4.

mortars and antitank weapons are considered. In order to place this fire-power evaluation of the U. S. and Australian platoons in its right perspective, it must be remembered that there are 20 rifle platoons in the Australian infantry battalion as compared to 9 in the U. S. infantry battalion. Also that there are 100 rifle platoons in the Australian division as opposed to 72 rifle platoons in the U. S. infantry division.

Communications

External communications capabilities available for both the U. S. and Australian infantry battalions are similar. The primary difference is that the equipment and operators are organic to the U. S. infantry battalion, while they are furnished to the Australian infantry battalion from the division signal regiment.

Internal communications differ as to range and mobility of the radio sets. The U. S. infantry battalion command net is provided by vehicular mounted radios with a maximum range of 32 kilometers. The Australian infantry battalion command net is provided by back-pack radios with a maximum range of 8 kilometers, supplemented by a long range net with a maximum range of 80 kilometers. Company command radio nets provided by back-pack radios are relatively similar in both the U. S. and Australian infantry battalions. The primary difference in the platoon net is that the U. S. platoon leader can receive information from his squad leader by use of a two-way radio, but the Australian platoon leader can only issue instructions on his one-way radio.

Communications capabilities in both battalions enable respective battalion commanders to maintain contact with higher headquarters and simultaneously communicate with subordinate elements. It is important to know that the radio equipment available to both battalions is compatible

within a limited frequency span. Both U. S. and Australian battalions have the capability of establishing mutual radio communications with either the external or internal radio facilities. Lateral coordination between U. S. and Australian infantry battalions can be accomplished by radio down to the company level.

Transport

Considering a ratio of men per vehicle, the U. S. infantry battalion has an organic vehicle density twice that of the Australian infantry battalion. (U. S. 1 vehicle/7.15 men, Australian 1 vehicle/16 men). The difference is due primarily to the fifty communications vehicles in the U. S. infantry battalion. After accounting for special purposes vehicles (communications, weapons carriers, and ambulances), each battalion has approximately the same number of vehicles for logistical support. A significant factor in jungle operations will be not only the number of vehicles, but also the type. Here the Australian infantry battalion has an advantage in mobility with the light weapons carrier and the 3/4 ton truck. Mobility within the U. S. infantry battalion will be somewhat restricted by its heavier type vehicles (2½ ton and 5 ton trucks). Each battalion must be augmented with vehicles before the rifle companies can conduct motorized or mechanized operations.

Transport, like all other areas of comparison, points out that the Australian infantry battalion was very carefully organized and equipped for specialized operations. As a matter of contrast, the U. S. infantry battalion is organized and equipped for diversified types of operations.

ARMOR

Armor units in the U. S. and Australian infantry division include

both tank units and reconnaissance units. Each type unit is discussed separately.

U. S. TANK BATTALION

Mission

"The mission of the [U. S.] tank battalion is to close with and destroy enemy forces, using fire and maneuver, and shock action in coordination with other arms."¹

Organization

The U. S. tank battalion is organized with a headquarters and headquarters company and three tank companies. (See Table 9.) The headquarters and headquarters company contains a combination of control, combat, combat support, and combat service support elements. Each tank company contains a headquarters, and three tank platoons. Though the tank battalion has a fixed table of organization, the brigade commander may detach and/or attach units in organizing for combat in the same manner as the U. S. infantry battalion.²

Equipment

The distribution of vehicles authorized for the U. S. tank battalion is shown in Table 9. There are two type tanks in the U. S. tank battalion. The M-41 light tank mounting a 76mm gun is found in the reconnaissance platoon. All other tanks are in the medium class. These are the

¹U. S., Department of the Army, FM 17-15, Tank Units, Platoon, Company, and Battalion, 1961, p. 6.

²Above, p. 23.

TABLE 9

U. S. TANK BATTALION^a

	HEADQUARTERS AND HEADQUARTERS COMPANY ^b											TANK COMPANY(3) ^c			BN TOTAL
	Bn Hq Sec	Co Hq Sec	Bn Recon Plat	Mortar Plat	Commo Plat	Grd Survl Plat	AVLB Sec	Maint Plat	Med Plat	Support Plat	CO TOTAL	Co Hq	Tank Plat (3)	CO TOTAL	
Personnel															
Officers	11	3	1	1				1	2	3	22	2	1	5	37
Enlisted Men	36	25	32	33	12	19	6	30	23	67	283	28	19	85	538
Vehicles															
Tanks	3		2								5	2	5	17	56
Tracked carriers	4		6	1	1	6			3		21	1		1	24
AVLB							2				2				2
Tank Dozer												1		1	3
1/4 ton truck	7	2		4	3	1	1	1	1	4	24	3		3	33
3/4 ton truck		1			1			2	1		5	1		1	8
2½ ton truck	1	3						4	1	5	14	1		1	17
5 ton truck										20	20				20
2½ tanker										1	1				1
Tank Recovery								1		1	2				5
5 ton wrecker		1						1			2				2
SP 4.2 Mortar			4								4				4

^aU. S., Department of the Army, TOE 17-35E, Tank Battalion, Infantry Division, 15 July 1963.

^bU. S., Department of the Army, TOE 17-36E, Headquarters and Headquarters Company, Tank Battalion, Infantry Division, 15 July 1963.

^cU. S., Department of the Army, TOE 17-37E, Tank Company, Tank Battalion, Infantry Division, 15 July 1963.

M-60 mounting a 105mm gun. The tracked carriers shown in Table 9 include three types: the personnel carrier M-113, the command post carrier light track, and the carrier M-114. Note that the presence of the self-propelled

4.2 mortar gives the battalion a fire support means that has cross country mobility equal to the tank elements of the battalion.

Firepower

The firepower potential of the U. S. tank battalion is based primarily on the 45 tanks found in the tank platoons and the 4 self-propelled 4.2 mortars in the tank battalion mortar platoon. Other tanks and weapons were not considered because they are not normally engaged, except in a protective role.

Communications

The U. S. tank battalion has organic radio equipment to enable it to maintain communication with higher headquarters and all subordinate headquarters. Both external and internal radio nets parallel those described for the U. S. infantry battalion.¹

Within the tank companies, radio communication follows command channels down to the individual tank commander. At the company headquarters there is a tank for the artillery forward observer, which includes communications to control indirect fire support from within the tank. Mutual radio communications channels can be established between tank and rifle unit commanders when these units are employed together.

Transport

The U. S. tank battalion is 100% mobile using its organic vehicles. The combat elements of the battalion are provided armor protection, while

¹Above, p. 26.

combat service support elements of the battalion (except medical evacuation carriers) have wheeled vehicles.

AUSTRALIAN ARMoured REGIMENT

Roles

"The roles of the [Australian] armoured regiment are:

- (a) The close support of infantry.
- (b) Mobile operations supported by other arms in open country.
- (c) Counter-attack.
- (d) Counter-penetration and assistance in anti-tank defence in open country.
- (e) Countering enemy follow-up action after a nuclear strike and providing a means of exploiting our own nuclear fires."¹

Organization

The Australian armoured regiment is organized with a regimental headquarters, a headquarters squadron, and three tank squadrons. (See Table 10.) The regimental headquarters is the control element for the regiment. The headquarters squadron provides combat, combat support, and combat service support for the regiment. The three tank squadrons are the principal combat elements of the regiment and are organized with a squadron headquarters, an administrative troop, and three tank troops. Though the armoured regiment has a fixed organization, it may be employed as a unit, or by attaching one or more tank squadrons to an infantry battalion.

¹Infantry Training, Vol IV, Part 1, op. cit., p. 92.

TABLE 10

AUSTRALIAN ARMOURED REGIMENT^a

	Regt Hq	HEADQUARTERS SQUADRON					TANK SQUADRON (3)				REGT TOTAL
		Squadron Hq	Special Equip- ment Troop	Reconnaissance Troop	Administrative Troop	TOTAL	Squadron Hq	Tank Troop (4)	Administrative Troop	TOTAL	
<u>Personnel</u>											
Officers	7	2	1	1	2	6	4	1	0	8	34
Other Ranks	16	5	20	11	75	111	13	11	38	95	412
<u>Vehicles</u>											
Tank	2						3	3		15	47
Scout Car	2	1		6		7	1			1	12
Carrier	2										2
Bridge Layer			3								3
Tank Dozer			3								3
Tracked Load Carrier					3	3			4	4	15
3/4 ton truck	1	2	1		5	8	1		1	2	15
2½ ton truck					10	10			4	4	22

^a"The Pentropic Division," Australian Army Journal, CXXIX (February, 1960), p. 15.

Equipment

Unit distribution of vehicles authorized for the Australian armoured regiment are shown in Table 10. The tank in the Australian armoured regiment is the Centurian MK5 medium gun tank, armed with a 20 pound gun.¹ The scout car is a four-wheeled armored vehicle, armed with

¹Australian Army Journal, CXXXIV, loc. cit., p. 28.

a .30 Browning machinegun.¹ The tracked load carrier is a vehicle with the same cross country capability as the tank, and was designed to resupply forward tank units.

Firepower

The firepower potential of the Australian armored regiment is primarily based on the 44 tanks in the tank troops. Other tanks and weapons were not considered because they are not normally engaged in other than a protective role. Note that there are no indirect fire support weapons organic to the Australian armored regiment.

Communications

The Australian armored regiment maintains external communications by the use of personnel and equipment provided by an attached unit of the division signal regiment. Internal communications are accomplished by organic radio and operators. Radio communications parallel command channels, with a separate net at regimental, squadron, and troop level. When tank units are attached to rifle units, the tank unit can establish communications by adjusting the tank radio to the frequency being used for the rifle unit command net. An artillery forward observer working with the squadron uses the communications in a squadron headquarters tank.

Transport

The Australian armored regiment is 100% mobile using its organic vehicles. Combat elements of the battalion are provided armor protection,

¹Ibid., p. 29.

while a number of track vehicles (15) are available for combat service support missions.

COMPARISON AND ANALYSIS

In comparing the U. S. tank battalion with the Australian armored regiment it must be remembered that there are two tank battalions in the U. S. infantry division and one armored regiment in the Australian division.

Mission vs Roles

As with the infantry battalions of the two divisions, the missions of the U. S. tank battalion and the role of the Australian armored regiment are fundamentally the same. The U. S. tank battalion's mission covers both the "what" and "how" and the Australian armored regiment's role concentrates on the "what".

Organization

There is no significant difference in the organization of the U. S. tank battalion and the Australian armored regiment. There is a difference at U. S. tank company - Australian squadron level. Here we find that the U. S. tank company commander fights three platoons of five tanks as opposed to the Australian squadron commander who fights four platoons of three tanks each.

Equipment

The trend toward lighter and fewer types of equipment continues in the Australian armored regiment. The similarities of infantry type weapons is not found in armor units. For practical purposes all equipment in the Australian armored regiment is different from that found in the U. S.

tank battalion.

Firepower

The tank firepower of the U. S. tank battalion and the Australian armoured regiment are approximately the same. An advantage is obtained by the U. S. tank battalion when indirect supporting fires are considered. Here the Australian armoured regiment has no weapons to compare with the four self-propelled 4.2 inch mortars in the U. S. mortar platoon.

When the tank firepower of the two divisions is compared the U. S. division has a two-to-one advantage, since it has two tank battalions and the Australian division one armoured regiment.

Communications

There are no significant differences in the communications capabilities of the compared tank units. Both have sufficient equipment either organic or in support, to provide radio communications to higher, lower, and adjacent headquarters. Radio sets in the U. S. tank battalion are compatible with radio sets of the Australian armoured regiment, provided the common frequency used is within the frequency band of the Australian radios.

Transport

Both tank units are 100% mobile utilizing organic vehicles. The Australian armoured regiment has tracked vehicles for use in a resupply role, which could be a significant advantage in jungle operations.

U. S. ARMORED CAVALRY SQUADRON

Mission

"The [U. S.] armored cavalry squadron performs three types of missions: reconnaissance, security, and economy of force. The squadron is organized, equipped, and trained to engage in offensive and defensive combat or in retrograde operations in the execution of these missions."¹

Organization

The U. S. armored cavalry squadron is organized with a headquarters and headquarters troop, three armored cavalry troops and an air cavalry troop. (See Table 11.) Headquarters and headquarters troop has a combination of control, combat support and combat service support elements.² Each armored cavalry troop has a headquarters, and three armored cavalry platoons.³ The air cavalry troop is organized with a headquarters, operations section, an aero-scout platoon, an aero-rifle platoon, an aero-weapons section, and a service platoon.⁴

Each platoon in the armored cavalry troop consists of a scout section, a tank section, a rifle squad, and a support squad. This platoon, operating as a unit, is the basic ground tactical unit of the armored cavalry squadron, and all elements are transported by tracked vehicles.

The air cavalry troop is unique in that it is the only combat unit

¹U. S., Department of the Army, FM 17-36, Armored Cavalry Units, Platoon, Troop and Squadron, 1961, p. 197.

²Ibid., p. 200.

³Ibid., p. 13.

⁴Ibid., p. 126.

TABLE 11

U. S. ARMORED CAVALRY SQUADRON^a

	Hq & Hq Troop ^b	Armd Cav Troop (3) ^c	Air Cav Troop ^d	Squadron Total
<u>Personnel</u>				
Officers	18	5	12	45
Warrant Officers	3		19	22
Enlisted Men	199	146	112	749
<u>Vehicles</u>				
Lt Tanks		6		18
Tracked Carriers	12	23		81
1/4 ton truck	17	3	3	29
3/4 ton truck	7	1	3	13
2½ ton truck	15	1	10	28
5 ton truck	18		2	20
5 ton wrecker	3			3
SP 4.2 Mortar		3		9
Recovery Vehicle	2	1		5
<u>Aircraft</u>				
OH ^e			9	9
UH ^f			17	17

^aU. S., Department of the Army, TOE 17-105E, Armored Cavalry Squadron, Infantry Division, 15 July 1963.

^bU. S., Department of the Army, TOE 7-106E, Headquarters and Headquarters Troop, Armored Cavalry Squadron, Infantry Division, 15 July 1963.

^cU. S., Department of the Army, TOE 7-107E, Armored Cavalry Troop, Armored Cavalry Squadron, Infantry Division, 15 July 1963.

^dU. S., Department of the Army, TOE 7-108E, Air Cavalry Troop, Armored Cavalry Squadron, Infantry Division, 15 July 1963.

^eObservation helicopter.

^fUtility helicopter.

in the U. S. infantry division that transports its fighting elements by organic helicopters. All helicopters in the air cavalry troop may be

armed. This not only provides organic aerial fire support but it enables the troop to provide armed escort for other airmobile forces.

Because of the diversified capabilities of the U. S. armored cavalry squadron it may be employed in several ways. The division commander may employ the entire squadron under division control. An element of the squadron may be attached to a control headquarters subordinate to the division and the squadron minus employed under division control. The entire squadron may be attached, in whole or by separate elements, to control headquarters subordinate to the division.

Equipment

Unit distribution of selected items of equipment in the U. S. armored cavalry squadron are shown in Table 11. All tanks in the squadron are of the M-41 light tank design, mounting a 76mm gun. There are three types of tracked carriers in the squadron, similar to those in the U. S. tank battalion.¹ Each of the nine observation helicopters in the air cavalry troop has mounted twin .30 caliber machineguns. The utility helicopters are armed as follows: four carry SS-11 guided missiles, four carry 2.75 inch rockets, and nine carry quad 7.62mm machineguns.

Firepower

To appreciate the potential firepower of the U. S. armored cavalry squadron, the ground elements and the air elements should be considered separately. The nine armored cavalry platoons provide the firepower for the armored cavalry squadron on the ground. Each platoon is armed with nine machine guns (one on each vehicle), two 76mm tank guns, a self-propelled

¹Above, p. 40.

4.2 mortar, and a rifle squad. The air cavalry troop has a total of nine twin .30 caliber machineguns, four SS-11 rockets, four 2.75 inch rocket launchers, and nine quad 7.62mm machineguns for aerial support. On the ground this firepower can be supplemented by an aero-rifle platoon composed of four 9 man squads.

Communications

Flexibility is the keynote of communications in the U. S. armored cavalry squadron. Organic equipment enables the squadron to maintain communications on any assigned mission within a normal division area.

Transport

All elements of the U. S. armored cavalry squadron move on organic transportation. The ground fighting elements of the squadron are transported in armor protected tracked vehicles, and air fighting elements are transported in armed helicopters. Combat service support elements of the squadron are provided with wheeled vehicles.¹

AUSTRALIAN RECONNAISSANCE SQUADRON

Task

"The primary task of the [Australian] reconnaissance [squadron] are medium reconnaissance (finding and maintaining contact with the enemy) and battlefield surveillance."²

¹ Above, p. 42, 43.

² Infantry Training, Vol IV, Part 1, op. cit., p. 93.

Organization

The Australian reconnaissance squadron is organized with a headquarters, five reconnaissance troops, an administrative troop and a surveillance troop. (See Table 12.) Control and combat service support are

TABLE 12

AUSTRALIAN RECONNAISSANCE SQUADRON^a

	HEAD- QUARTERS	RECON TROOP (5)	ADMIN TROOP	SURVL TROOP	TOTAL
<u>Personnel</u>					
Officers	3	1	1	1	10
Other Ranks	20	21	48	20	193
<u>Vehicles</u>					
Armd Car		1			5
Personnel Carrier	3	1	1		9
Scout Car	1	4			21
3/4 ton truck	1		13	5	19
2½ ton truck			3	1	4
<u>Weapons</u>					
81mm Mortar	2				2

^a"The Pentropic Division," Australian Army Journal, CXXIX (February, 1960), pp. 16-17.

provided through a headquarters and the administrative troop. An indirect fire support element (two 81mm mortars) organic to the squadron is included in the headquarters. The surveillance troop works normally with the division aviation company.¹ The primary combat elements of the squadron are the five reconnaissance troops. Each of the reconnaissance troops have

¹Australian Army Journal, CXXIX, loc. cit., p. 16.

four scout cars, one personnel carrier, and one armored car.¹

Employment of the Australian reconnaissance squadron may be as a unit under division control or by attachment of one or more reconnaissance troops to infantry battalions.

Equipment

The allocation of selected items of equipment in the Australian reconnaissance squadron are shown in Table 12. The armored car is a six wheeled, armored vehicle, armed with a 76mm gun and two .30 caliber machineguns. The scout car is a four wheeled, armored vehicle, armed with one .30 caliber machinegun. The personnel carrier is a six wheeled armored vehicle, armed with one .30 caliber machinegun and one .303 caliber machinegun.²

Firepower

Five reconnaissance troops contain the firepower potential of the Australian reconnaissance squadron. Each is armed with eight machineguns (vehicular mounted), one 76mm gun, in addition to weapons of the organic rifle squad. Indirect fire support is limited to the two organic 81mm mortars in the squadron headquarters.

Communications

Unlike the other combat elements of the Australian division, the reconnaissance squadron has its own organic communications equipment and operators, to establish contact with higher headquarters. Adequate

¹M. A. Count, "The Reconnaissance Troop," Australian Army Journal, CLXI, (October, 1962), p. 5.

²Australian Army Journal, CXXXIV, loc, cit., pp. 27-29.

communications equipment exists in the squadron to facilitate internal control of the squadron and to establish communication with the next higher headquarters.

Transport

All elements of the Australian reconnaissance squadron move on organic wheeled vehicles. The fighting elements of the squadron are provided with armored protection on their vehicles.

COMPARISON AND ANALYSIS

Mission vs Task

The primary difference between the U. S. armored cavalry squadron and the Australian reconnaissance squadron is based on the "staying power" of the two units. The U. S. armored cavalry squadron is expected to be decisively engaged in performing at least part of its mission (economy of force). On the other hand, the basic task of the Australian reconnaissance squadron is to find the enemy and maintain contact. This envisions units moving freely over the battlefield avoiding decisive engagement.

Organization

This difference in mission is directly reflected in the organizations. The U. S. armored cavalry squadron is organized around nine platoons, each of which is a small semi-independent fighting force with a maneuver element, a direct fire element and an indirect fire support element. The Australian reconnaissance squadron is organized around five reconnaissance troops with limited direct and indirect fire support.

The above comparison does not include the U. S. air cavalry troop.

This troop must be considered separately in that there is no comparable organic unit in the Australian division. The primary advantage of the air cavalry troop is that it greatly increases the area over which the squadron can conduct reconnaissance and security missions.

Equipment

In addition to armed helicopters in the U. S. air cavalry troop, the primary difference in equipment between the two squadrons is in the types of combat vehicles. All armored vehicles in the U. S. armored cavalry squadron are tracked as compared to wheeled vehicles in the Australian reconnaissance squadron.

Firepower

Using the U. S. armored cavalry platoon and the Australian reconnaissance troop for comparison, there is no significant difference in machinegun and rifle firepower. When tank and mortar fire are considered the U. S. platoon has an advantage. The U. S. platoon has two organic 76mm guns and one 4.2 inch mortar. The Australian troop has only one organic 76mm gun, and the mortar support of two 81mm mortars from squadron headquarters must be shared with four other troops.

The firepower potential of the Australian squadron is greatly overshadowed when the total number of U. S. armored cavalry platoons are compared with the total number of Australian reconnaissance troops (U. S. 9, Australian 5). The firepower potential of the U. S. air cavalry troop can be considered as a bonus, since no comparable unit exists in the Australian division.

Communications

The only aspect of note in comparing the two squadrons is that each has organic communications to support normal missions.

Transport

Both the U. S. armored cavalry squadron and the Australian reconnaissance squadron are 100% mobile using organic vehicles. Fighting elements of the U. S. squadron are provided with either armed helicopters or armored tracked vehicles, as compared to armored wheeled vehicles in the Australian squadron.

The all wheeled capability of the Australian squadron might prove to be an advantage in areas where ground routes were restricted to very narrow jungle trails. On the other hand, the track capability of the fighting elements of the U. S. squadron may be an advantage in muddy terrain. This latter situation might pose a logistical problem, as the U. S. squadron has only wheel-type resupply vehicles.

The most significant difference in combat units throughout the divisions is found in the U. S. armored cavalry squadron and the Australian reconnaissance squadron. This difference is attributable primarily to the aerial transport and firepower capability of the air cavalry troop. Secondly, the staying power of the U. S. cavalry squadron is much greater than the Australian reconnaissance squadron, based on number of troops and weapons.

CHAPTER III

COMBAT SUPPORT ELEMENTS

"The organic combat support elements available to the [United States] division commander are the division artillery, aviation battalion, engineer battalion, signal battalion; and the military police company."¹ There is no such classification of "combat support elements" in the Australian division. In the remainder of this chapter each combat support element is discussed in the following sequence: the U. S. combat service support element, the corresponding Australian element, and a comparison and analysis of both.

ARTILLERY

Division artillery is the primary source of organic indirect fire support in both the U. S. and Australian divisions. The artillery commander in each division is the division fire support coordinator (FSCoord).

U. S. INFANTRY DIVISION ARTILLERY

Mission

"To provide direct and general artillery support for an infantry

¹U. S., Department of the Army, FM 61-100, The Division, 1962, p. 32.

division."¹ The organization of the U. S. infantry division artillery is shown in Table 13. The headquarters and headquarters battery provides

TABLE 13

U. S. DIVISION ARTILLERY^a

	Hq & Hq Co	105mm How Bn(3) ^b	155mm/8 in How Bn ^c	Honest John Battalion ^d	TOTAL
<u>Personnel</u>					
Officers	38	39	29	24	208
Enlisted Men	167	448	576	221	2308
<u>Weapons</u>					
105mm How		18			54
155mm How			18		18
8 in. How			4		4
Honest John				4	4
<u>Vehicles</u>					
1/4 ton truck	17	28	22	20	143
3/4 ton truck	29	33	37	30	195
2½ ton truck	16	58	23	17	230
5 ton truck	1	1	45	1	50
10 ton truck			4		4
Wrecker		1	1	5	9

^aU. S., Department of the Army, TOE 6-100E, Infantry Division Artillery, 15 July 1963.

^bU. S., Department of the Army, TOE 6-155E, 105mm Howitzer Battalion, Infantry Division Artillery, 15 July 1963.

^cU. S., Department of the Army, TOE 6-165E, 155mm/8 in Howitzer Battalion, (Composite), Infantry Division Artillery, 15 July 1963.

^dU. S., Department of the Army, TOE 6-175E, Honest John Missile Battalion, Infantry Division Artillery, 15 July 1963.

¹U. S., Department of the Army, TOE 6-100E, Infantry Division Artillery, 15 July 1963.

personnel to administer and control the division artillery. Control is exercised through two separate elements: the fire support element (FSE) in the division tactical operations center (TOC), and division artillery headquarters. Coordination and planning of both nuclear and nonnuclear fires is accomplished in the FSE of the division TOC. The division artillery headquarters provides for centralized control of all field artillery with the division. Operational elements in the division artillery headquarters include a target acquisition platoon, a communications platoon, an aviation section, and a fire direction section.

The howitzer battalions of the U. S. division artillery are organized essentially the same. The battalion headquarters battery establishes a fire direction center; and furnishes communications, liaison officers, and forward observers to the supported unit. The service battery is responsible for supply, maintenance and ammunition. In each 105mm howitzer battalion there are three batteries. Each battery has six firing sections with one howitzer per section. In the 155mm/8 in. howitzer battalion, each of three 155mm howitzer batteries has six sections with one howitzer per section, and the one 8 in. howitzer battery has four sections with one howitzer per section.

The missile battalion incorporates the functions of control and logistics within the headquarters battery. Liaison officers and forward observers are not organic to this battalion. Firing elements of the battalion are in two missile batteries of two firing platoons with one launcher per platoon.

Equipment

All vehicles in the U. S. infantry division artillery are wheeled.

Size ranges from the 1/4 ton truck to the 5 ton truck. Howitzers are towed by trucks.

Firepower

U. S. division artillery firepower includes both nuclear and non-nuclear fires. A total of 76 howitzers and four Honest John rockets are available for the delivery of nonnuclear fires. A nuclear delivery capability exists in four Honest Johns, the four 8 in. howitzers, and the eighteen 155mm howitzers.¹

Communications

Control of all division artillery fires is dependent on the communications system. There is sufficient organic communications equipment in division artillery to provide separate radio nets which parallel command nets from division to company level. At each level of command an artillery officer coordinator, with artillery communications, is available to assist the commander in fire support matters. The communications system in the artillery gives the artillery forward observer with a rifle company the capability of controlling fires from all artillery capable of firing in his zone.

AUSTRALIAN DIVISION ARTILLERY

Task

"The main task of the [Australian] divisional artillery may be summarized as follows:

¹"Nuclear Projectile," Army Information Digest, Vol XIX, Number 2, (February, 1964), p. 14.

- (a) Close intimate fire support for infantry and armor.
- (b) Counter mortar ability.
- (c) Essential survey."¹

Organization

The organization of the Australian division artillery is shown in Table 14. Headquarters Royal Australian Artillery (Hq RAA) consists of the

TABLE 14

AUSTRALIAN DIVISION ARTILLERY^a

	Headquarters Royal Australian Artillery	Field Regiments (5)	Divisional Locating Battery	TOTAL
<u>Personnel</u>				
Officers	14	29	12	171
Other Ranks	44	357	135	1964
<u>Vehicles</u>				
3/4 ton truck	8	52	30	298
2½ ton truck	5	25	9	139
<u>Weapons</u>				
105mm How (M2A1)		8		40
105mm Italian Pack How		8		40

^aAustralian, Military Board, The Pentropic Division in Battle (Provisional), Part 5, Artillery, 1961, pp. 79-81.

artillery commander, staff, and equipment needed to control centrally the

¹"The Pentropic Division," Australian Army Journal, CXXIX, (February, 1960), p. 18.

division artillery. This headquarters becomes a functional part of the division main headquarters.¹

Each of the five field regiments has a headquarters, one towed battery and one pack battery. Both types of batteries are organized with a headquarters and two troops. Each troop has four howitzers. Each field regiment provides liaison officers, observation post parties, and communications to supported units.

The divisional locating battery has a headquarters, a survey troop with two sections, a radar troop with five detachments, and five separate counter-bombardment sections.

Throughout the Australian artillery organization there is a separate segment of personnel and equipment for countermortar activities. These segments include a Divisional Counter Bombardment Officer (DCBO) and staff at Hq RAA, and an Assistant Counter Bombardment Officer and a locating radar detachment (organic to the locating battery) normally employed with each infantry battalion.

Equipment

Vehicles in the Australian division artillery are either 3/4 ton or 2½ ton trucks. The 105mm towed howitzer is the same as the U. S. M2A2 howitzer. The 105mm pack howitzer is the Italian 105/14, which can be towed by a light truck or can be transported by mule (eleven loads).²

¹ Australia, Military Board, The Pentropic Division in Battle (Provisional), Part 5, Artillery, 1961, p. 12.

² "Equipment for the Pentropic Division," Australian Army Journal, CXXXIV, (July, 1960), p. 37.

Firepower

Australian division artillery produces only nonnuclear firepower, delivered by 80 light artillery weapons. Nuclear fire support for the division must be delivered by nondivisional means.

Communications

Basically, the communications system used by the Australian division artillery is similar to the system used by the U. S. division artillery.

"The scope and flexibility of [Australian] artillery communications enables the particular artillery commander who is located at the headquarters concerned to control the fire of any number of guns."¹

COMPARISON AND ANALYSIS--ARTILLERY

The Australian division artillery places more emphasis on the countermortar role than does the U. S. division artillery. This fact is borne out by the stated task and supporting organization.

Each division provides one light artillery unit per major tactical headquarters subordinate to division. (Australia, five field regiments -- five infantry battalions; U. S., three 105mm howitzer battalions -- three brigades.) Unlike the Australian division, the U. S. division artillery also has organic medium and heavy artillery.

In jungle operations the Australian pack howitzer, either towed by light truck or packed by animal, has a ground mobility advantage over artillery in the U. S. division. Although the M2A2 105mm howitzer in both divisions

¹The Pentropic Division in Battle (Provisional), Part 5, op. cit., p. 18.

can be airlifted by helicopter the pack howitzer seems best suited for jungle operations.

Organic nuclear delivery means in the U. S. division represents the most significant difference existing between the two division artilleries. Under conditions of nuclear warfare, this difference overshadows any other existing dissimilarity. Under nonnuclear conditions, where only howitzers are employed, the advantage in range of the U. S. division artillery would be counterbalanced by an advantage in the mobility and number of weapons in the Australian division artillery.

Communications in each division's artillery are adequate. Each division provides artillery officers and communications to each level of command from division to company. Through the established communications facilities each division's artillery forward observers can control all field artillery capable of firing in the observers zone.

Antiaircraft artillery has not been discussed because neither division has organic that capability. Antiaircraft support for both divisions must be furnished by higher headquarters.

AVIATION

U. S. INFANTRY DIVISION AVIATION BATTALION

Mission

"The mission of the [U. S.] division aviation battalion is to provide aviation support for the division headquarters, division support command, and other divisional units without organic aircraft. In addition, it provides:

- a. General support and reinforcement to units possessing organic aircraft.

- b. An aviation special staff section for the division."¹

Organization

The organization of the U. S. division aviation battalion is shown in Table 15. Headquarters and headquarters company has no aircraft. This

TABLE 15

U. S. AVIATION BATTALION^a

	Hq & Hq Co.	Airmobile Co. (Light)	Aviation General Support Co.	TOTAL
<u>Personnel</u>				
Officers	10	13	22	45
WO	1	16	6	23
EM	50	87	113	250
<u>Aircraft</u>				
OH ^b			10	10
UH ^c		25	6	31
Od ^d			4	4
Drones			10	10
Drone Launchers			3	3

^aU. S., Department of the Army, TOE 1-75E, Aviation Battalion, Infantry Division, 15 July 1963.

^bObservation helicopter.

^cUtility helicopter.

^dFixed wing observation aircraft.

company provides personnel for the aviation special staff section at division headquarters in addition to the command, control, communications,

¹U. S., Department of the Army, FM 1-15, Aviation Battalion, Infantry, Airborne, Mechanized and Armored Divisions, 1961, p. 1-1.

administration, and supply for the battalion. The airmobile company (light) has utility helicopters which provide a single lift capability for airlifting one infantry company.¹ Helicopters in this company provide a substantial augmentation to the division's normal capability for resupply and medical evacuation.

The aviation general support company's role can be best appreciated with a look at its platoon organization. The general support platoon has ten observation helicopters in the tactical support section and six utility helicopters in the utility section. The tactical support sections provide observation aircraft to the division staff, the support command, and other headquarters on a request basis.² On request, helicopters in the utility section provide support for division units that do not have organic helicopters, or they can be used for backup on any type mission assigned the airmobile company (light).³ The aerial surveillance and target acquisition platoon has both manned and drone aircraft. The four manned aircraft are medium observation airplanes equipped with photographic, radar sensing, and infrared sensing devices.⁴ This equipment gives this unit an all weather aerial reconnaissance and surveillance capability.

Equipment

In the table of organization for the U. S. infantry division aviation battalion the helicopters are not identified beyond the general

¹Ibid., p. 5-1.

²Ibid., p. 6-6.

³Ibid., p. 6-9.

⁴Ibid., p. 6-9.

classification of light observation and utility. This indicates that several different models of helicopters are being considered for adoption as standard items. Likewise, utility aircraft (fixed wing) are not specifically identified as to model. Both radar and aerial photography drones are organic to the battalion. These drones have a range in excess of 80 kilometers.

Communications

Radio is the primary means of communication within the U. S. division aviation battalion. In addition to entering the division radio nets, the aviation battalion establishes a command net, a logistics net, and an air traffic control net. Other communications responsibilities of the battalion are operating an airfield control tower, and ground controlled approach equipment (instrumented landings).

AUSTRALIAN LIGHT AIRCRAFT SQUADRON

Task

Australia's divisional light aircraft squadron performs, "the following main task:

- (a) Command and staff liaison.
- (b) Reconnaissance and battlefield surveillance.
- (c) Artillery observation.
- (d) Limited aerial photography.
- (e) Communications duties.
- (f) Limited casualty evacuation.

(g) Limited urgent carriage of freight and personnel."¹

Organization

The organization of the Australian light aircraft squadron is shown in Table 16. The squadron is controlled and administered through the

TABLE 16

AUSTRALIAN LIGHT AIRCRAFT SQUADRON^a

	Sq Hq	Adm Plat	Opn Plat	Recon & Surv Plat	Div Hq Plat	GS Plat Fixed Wing	GS Plat Rotary Wing	TOTAL
<u>Personnel</u>								
Officers	4	1	2	1	9	7	7	31
Other Ranks	6	26	14	43	7	17	17	130
<u>Aircraft</u>								
OH ^b					4		18	22
OC ^c					6	18		24

^a"The Pentropic Division," Australian Army Journal, CXXIX, (February, 1960), p. 46.

^bObservation helicopter.

^cFixed wing observation aircraft.

squadron headquarters, administrative platoon and operations platoon. The reconnaissance and surveillance platoon has equipment for producing aerial photographs. Air observation post, command liaison, and reconnaissance are supported by aircraft in the division headquarters platoon. There are two general support platoons. One general support platoon is equipped with

¹Australia, Military Board, The Pentropic Division in Battle (Provisional), Part 1, Organization and Tactics, 1960, p. 34.

observation helicopters and one with fixed wing aircraft. Some fixed wing aircraft "will be fitted to take battlefield surveillance devices."¹ Sections of the general support platoon may be detached for operations with other elements of the division.

Equipment

No standard aircraft has been adopted by the Australian Army at this time. The fixed wing aircraft under consideration is a three passenger Cessna 180. The rotary wing aircraft under consideration is the two passenger Hiller 12E.

Communications

Information on the communications system of the Australian light aircraft squadron is sketchy. Judging from one of the assigned tasks, "communications duties," it is assumed that sufficient communications exist in the supporting signal troop to afford adequate control of the battalion.

COMPARISON AND ANALYSIS--AVIATION

In addition to the aviation battalion, the U. S. infantry division has the following aircraft organic to other headquarters. Six helicopters with each of the three brigades, two fixed wing and ten helicopters with division artillery, and one helicopter with the maintenance battalion. (Aircraft organic to air cavalry troop are discussed separately under Armor.)¹

¹Australian Army Journal, CXXIX, loc. cit., p. 46, Fig. 15, Note 1.

²Above, p. 48.

The U. S. infantry division has a significant advantage in aviation capability over the Australian division. This advantage primarily is a result of the numbers of manned aircraft and the lift capacity of helicopters. The U. S. division has 76 manned aircraft as compared to 46 in the Australian division. (U. S. air cavalry excluded.) Nearly half of the manned aircraft (32) in the U. S. division are utility helicopters with a significant lift advantage over the Australian observation helicopters. The ability to airlift a rifle company in one lift with organic aircraft gives the U. S. infantry division commander a capability which cannot be obtained with organic means in the Australian division.

ENGINEERS

U. S. INFANTRY DIVISION ENGINEER BATTALION

Mission

"a. To increase the combat effectiveness of the division by means of general and specialized engineer work.

b. To undertake and carry out combat missions when required."¹

Organization

The organization of the U. S. infantry division engineer battalion is shown in Table 17. The headquarters and headquarters company furnishes the personnel to administer and control the battalion. The headquarters company operates an equipment pool which furnishes supplemental engineer

¹U. S., Department of the Army, FM 5-135, Engineer Battalion, Armored, Mechanized, and Infantry Division, 1961, p. 17.

TABLE 17

U. S. DIVISION ENGINEER BATTALION^a

	Hq & Hq Co.	Bridge Co.	Engineer Co. (4)	Total
<u>Personnel</u>				
Officers	21	5	5	46
Enlisted Men	168	148	145	896
<u>Equipment</u>				
1/4 ton truck	13	8	5	41
3/4 ton truck	12	3	2	23
2½ ton truck	4	30	3	46
5 ton truck	6		13	58
Wrecker	1			1
Combat Engineer Vehicle (tracked)			1	4
Tank Recovery Vehicle	1			1
25 ton semitrailer	3	3	2	14
60 ton semitrailer		1		1
AVLB		4		4
20 ton crane	2	1		3
Grader	4			4
Scoop Loader			3	12
Air Compressor	1		1	5
5 ton truck tractor	1			1
10 ton truck tractor	3	4	2	15
Tractor tracked	3	1	2	12

^aU. S., Department of the Army, TOE 5-155E, Engineer Battalion, Infantry Division, 15 July 1963.

equipment to the other companies of the battalion. The engineer battalion commander is also the division engineer special staff officer. This special staff function is performed through an engineer section in the division main command post. The assistant division engineer is responsible for this section. He and personnel to man this section are assigned to the engineer battalion headquarters and headquarters company.

The four lettered engineer companies are the basic operating units

of the battalion. One company of engineers normally supports each committed brigade. When the company employed with a brigade has a requirement for equipment that is organic to either the headquarters company or the bridge company, that equipment and operators will be attached to the engineer company.

The bridge company of the battalion is employed according to the division mission, and may be employed as a unit, by platoons, or by sections. Platoons and sections can be attached to the lettered engineer companies as required.

Equipment

Major items of engineer equipment are listed in Table 17. Equipment organic to the bridge company provides "the following capabilities:

(1) Providing . . . class 60 bridges or rafts in the following combinations:

- (a) One 144 meter mobile assault bridge (MAB), or
- (b) Two 72 meter mobile assault bridges, or
- (c) Four 48 meter mobile assault rafts.

(2) Providing armored vehicular launched bridging (AVLB) capable of crossing class 60 loads over wet or dry gaps up to approximately 18 meters in width. . . .

(3) Providing light stream crossing equipage . . . with the following capabilities:

- (a) Eighteen assault boats. . . .
- (b) Light tactical raft sets to provide the following options:
 - 1. Two . . . class 12 (rafts) . . . or
 - 2. One floating bridge, class 11 . . . 28 meters in

length, or

3. Eight pontoons powered by outboard motors. . . ."¹

Communications

There is sufficient organic communications equipment available in the U. S. infantry division engineer battalion to provide adequate control. The battalion enters the division radio nets, and establishes two separate command radio nets (both AM and FM). Other command FM radio nets are established at company and platoon level.

AUSTRALIAN DIVISIONAL ENGINEERS

Role

"The role of the [Australian] divisional engineers is to maintain the mobility of our own troops whilst doing everything possible to hinder the mobility of the enemy. They also provide miscellaneous engineer services."²

Organization

The organization of the Australian divisional engineers is shown in Table 18. The Headquarters Royal Australian Engineers (Hq RAE) is primarily a planning group for the division's engineer activities. This headquarters is located with the main division command post, and the commander is an advisor to the division staff. Hq RAE directs the two

¹Ibid., p. 54-56.

²Australia, Military Board, Infantry Training, Vol IV, Part 1, The Battalion, (Provisional), 1961, p. 121.

operating elements of divisional engineers, the field engineer regiment and the field park squadron.

TABLE 18

AUSTRALIAN DIVISIONAL ENGINEERS^a

	Hq RAE	FIELD ENGINEER REGIMENT			Field Park Squadron	TOTAL
		RHQ	Field Sqdn (5)	TOTAL		
<u>Personnel</u>						
Officers	4	8	4	28	7	39
Other Ranks	9	45	112	605	151	765
<u>Equipment</u>						
3/4 ton truck	2	7	4	27	15	44
2½ ton truck	1	5	4	25	16	42
Scout car			1	5		5
Tracked Amphib			2	10		10
2½ ton tipper			4	20		20
Air Compressor			2	10		10
Wheeled tractor w/loader			2	10		10
Wheeled Dozer			2	10		10
Bridge Crane					2	2
Crane 5 ton					1	1
25 ton semi-tlr					1	1
Forklift					1	1
Excavator					2	2
Grader					4	4
Scraper					6	6
Shovel loader					3	3
Tractor tracked					6	6
Tractor wheeled					3	3

^a"The Pentropic Division," Australian Army Journal, CXXIX, (February, 1960), p. 23.

The field engineer regiment has a regimental headquarters (RHQ) that controls five field squadrons. The field squadron is the basic engineer operating unit, and one squadron normally supports each infantry battalion.

The field park squadron furnishes backup heavy equipment for the field squadrons, provides engineer supplies, conducts repair of engineer equipment and has a bridging capability "for emergency crossings of a minor nature."¹

Equipment

Major items of equipment in the Australian divisional engineers are listed in Table 18. Bridging equipment in the field park squadron consists of "three infantry support rafts (class 3), three 38 feet span fixed (class 35), nine assault boats, and twelve outboard motors."²

Communications

An engineer signal troop from the signal regiment provides radio communication to the engineer squadron. Organic facilities are used for communications below the squadron level.

COMPARISON AND ANALYSIS--ENGINEERS

Engineers in both the U. S. and Australian divisions perform the same functions, and their organization is essentially the same. There are units to support the major tactical headquarters subordinate to division, plus a holding unit for backup heavy equipment.

The major difference between the two units is in bridging capability. The U. S. infantry division has considerably more river crossing equipment.³ Another difference is the engineer supply role of the

¹Australian Army Journal, CXXIX, loc. cit., p. 24.

²The Pentropic Division in Battle (Provisional), Part 2, Administration, 1961, p. 104.

³Above, p. 72.

Australian divisional engineers, which includes "receipt, handling, holding, maintenance and issue of engineer stores for the division."¹

Two common functions performed by engineers in both divisions which have not been discussed above are: each is responsible for supplying water,² and each has a secondary mission to fight as infantry. Prior to fighting as infantry, in either division, fire support must be provided as well as time for assembling and equipping.

SIGNAL

U. S. INFANTRY DIVISION SIGNAL BATTALION

Mission

"The mission of the [U. S.] division signal battalion is --

a. To provide signal communications to include communications to subordinate units, for the --

(1) Division headquarters and the division headquarters company, exclusive of internal nets.

(2) Headquarters and headquarters company, support command, exclusive of internal radio nets.

b. To establish and operate the division area communications system.

c. To provide area signal center service to units located in the vicinity of the division area signal centers, supplemental to organic facilities.

¹Australian Army Journal, CXXIX, loc. cit., p. 24.

²Each division is capable of operating a maximum of five water points.

- d. To establish and operate facilities to connect division artillery headquarters into the division area communications system.
- e. To operate the division area ground messenger service.
- f. To perform photography (except aerial photography) for the division and still picture service for all divisional units.
- g. To perform third echelon maintenance of all cryptographic equipment in the division, and organizational maintenance of signal equipment in the battalion.
- h. To provide each brigade headquarters with multichannel communications to each of the two command echelons of the division."¹

Organization

The U. S. division signal battalion is organized into a headquarters and headquarters company, a command operations company, and a forward communications company. The headquarters and headquarters company contains a combination of control, administrative, and operational elements. Control elements include the division signal officer's section (special staff located at division main command post), the command and staff elements of the signal battalion headquarters, and the company headquarters. Administrative elements include a motor maintenance section. Operating elements include the photography section, the field cable installation section, and a radio terminal and carrier section.

The command operations company establishes and operates signal facilities at division main, division rear, and support command command post. Limited communications facilities are provided for an alternate

¹U. S., Department of the Army, FM 11-50, Signal Battalion Armored, Mechanized and Infantry Divisions, 1961, pp. 6-7.

division command post and a forward command post when required. Support provided by the command operations company includes message center service, telephone services, and operators and equipment for division radio nets. This company also supports division artillery by furnishing communications for the fire support coordination center, and connecting division artillery into the division area communications system.

The forward communications company establishes up to three forward area signal centers (FM radio/wire integration, messenger service, and radio relay) as part of the division's area communications system. These centers serve units on an area basis. Additionally, this company supports each brigade with a 12 channel radio relay system which connects the brigade headquarters with division main headquarters, other brigades, and signal centers.

Communications

U. S. division radio nets are shown in Table 19.

AUSTRALIAN SIGNAL REGIMENT

Role

"The [Australian] divisional signal regiment is responsible for --

(a) Communications within the division down to and including the rear links of units and in some cases subunits.

(b) The provisions of rear links for communications to higher formations.

(c) The provision of personnel within units for maintenance of signal equipment and battery charging.

(d) Advice to commanders and staffs on signal security and the

TABLE 19

U. S. INFANTRY DIVISION RADIO NETS^a

UNITS	Army Air Req	Army Log	Corps Comd/ Op	Div Comd/ Op	Div Intel	Div CG/ Comd	Div Admin/ Log	Sig Cen	Div Air Req	Div Warn- ing	Air Force
Div Main		S	S	S	S	S	S	S		S	S
Div Altn		S	S	S	S					S	
Div Rear								S		S	
Bde				S	X	X	X		X	X	X
Div Arty				X	X	X	X			X	X
FSCC	S								S	S	S
Cav Sqdn				X	X	X	X		X	X	X
Avn Bn				X	X	X	X			X	
Div Spt Comd				S		X	S			S	
Engr Bn				X		X	X			X	
Tac Bns							X		X	X	X
Area Sig Centers								S		S	
Sig Bn						X					
Maint Bn							X			X	
Sup & Trans Bn							X			X	
Med Bn							X				
TYPE	RATT	RATT	RATT	RATT	RATT	FM Voice	RATT	RATT	AM CW Voice	AM Voice	UHF Voice

^SPersonnel and equipment furnished by signal battalion.

^XPersonnel and equipment organic to unit.

^aU. S., Department of the Army, FM 11-50, Signal Battalion Armored, Mechanized, and Infantry Divisions, 1961, p. 33.

monitoring of all communications within the division.

(e) The provision of cipher facilities where required within the division.

(f) The supply of signal project stores to the division and the

physical control of signal controlled stores."¹

Organization

The Australian signal regiment is organized into a regimental headquarters; an administration, command operations, forward operations, combat operations, and artillery squadrons. The regimental headquarters is the control element for the regiment. The regimental commander is also the signal advisor for the division staff. A security troop works directly under the regimental headquarters and monitors all division communications.

The administration squadron handles the administration and logistics functions of the signal regiment. It also performs the division level signal supply and maintenance functions.

The command operations squadron has four separate troops to support division main, division rear, task force, and the light aircraft squadron. Troops of this squadron provide radio communications and signal center service (messenger and telephone) to the supported headquarters.

The forward operations squadron provides radio relay and signal dispatch services between division and subordinate elements. Troops within this squadron are employed as needed.

The combat operations squadron has seven separate troops, one supporting each of the five infantry battalions, one supporting the headquarters of divisional engineers, and one supporting the armoured regiment headquarters. Each of these troops provide radio communications to the supported headquarters. In the engineer and armoured units, radio communications down to the squadron level is the responsibility of the division

¹The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 30.

signal units. Those troops supporting the infantry battalions provide signal center service in addition to radio communications.

The artillery squadron provides seven troops to support division artillery headquarters, the five artillery field regiment headquarters, and the division counter bombardment officers. The troop supporting division artillery headquarters provides radio communications and signal center service. The troops with each artillery field regiment provide radio communications to division artillery headquarters. The division counter bombardment troop provides a series of radio nets to support counter bombardment operations from division level to radar detachments located with infantry battalions.

Communications

Australian division radio nets are shown in Table 20.

COMPARISON AND ANALYSIS--SIGNAL

The basic task of providing communications for subordinate elements can be accomplished by signal units of both the U. S. and the Australian divisions. Organization and concept are dissimilar, but both achieve substantially the same results. It is significant that the two systems are compatible and lateral communications could be established with organic equipment at division level, either by use of radioteletype equipment or voice radio. At the Australian infantry battalion level, lateral voice communications can be established with either the U. S. brigade or any U. S. combat battalion.

TABLE 20

AUSTRALIAN DIVISION RADIO NETS^a

UNITS	Div CG/ Comd	Div Adm in	Div Comd/ Op	Div Intel	Div Air Req	Arty Comd Net	Arty Adm- in	Cntr Bombm Off.	Eng Comd	Elec Mec Eng	Div Cln
Div Main	S	S	S	S	S	S	S	S			
Div Rear		S	S		S					X	X
Hq Task Force	S	S	S	S	S						
Armd Regt	S	S									
Recon Sqdn	S			S	S						
Fld Regt (Arty)						S	S				
Div Loc Btry						S	S	S			
Fld Regt (Eng)									S		
Fld Park Sqdn									S		
Inf Bn	S	S	S	S	S						
Lt Air Sqdn		S		S	S	S					
Service Corps Co											X
Inf Workshops										X	
TYPE	FM	AM	AM	AM	AM	FM	AM	FM	FM	FM	FM
	Voice	Voice	RATT	Voice	Voice	Voice	Voice	Voice	Voice	Voice	Voice

^SPersonnel and equipment furnished by signal regiment.

^XPersonnel and equipment organic to unit

^aAustralia, Military Board, The Pentropic Division in Battle (Provisional), Part 1, Organization and Tactics, 1960, p. 245.

MILITARY POLICE

U. S. MILITARY POLICE COMPANY

Mission

"To provide military police to the [U. S.] Infantry Division."¹

¹U. S., Department of the Army, TOE 19-27E, Military Police Company, Infantry Division, 15 July 1963.

Organization

The U. S. military police company has a provost marshal section, a company headquarters, a security platoon, and four military police platoons. The provost marshal section provides personnel for the special staff section that operates from division main. The company headquarters controls and administers the company. The security platoon provides ground defense for division main and tactical command posts. The four military police platoons normally are employed in a direct support role. One platoon supports each committed brigade and support command.

Transport

Motor patrols furnished by the military police company use the 1/4 ton truck for transport.

Communications

Internal communications of the military police company are provided by vehicle mounted FM radios with a 32 kilometer range.

AUSTRALIAN PROVOST COMPANY

"The roles of provost are --

- (a) Traffic control.
- (b) Supervision and enforcement of discipline outside units.
- (c) Supervision of prisoners of war, including the divisional

cage.

- (d) Handling of refugees."¹

¹The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 43.

Organization

The Australian divisional provost company is organized with a headquarters and eight provost sections. The headquarters contains the deputy assistant provost marshal who is the provost advisor to the division headquarters, and the control and administrative elements of the company. The eight sections are maintained under centralized control when possible. Normal employment is with one section at division main, one section at division rear and the remaining sections assigned as needed.

Transport

Mobility for the Australian provost company is furnished by motor cycle.

Communications

Internal communications of the provost company are provided by FM portable radios with an 8 kilometer range.

COMPARISON AND ANALYSIS--MILITARY POLICE

Minor differences exist between the U. S. military police company and the Australian provost company in organization, transport, and communications. The U. S. platoons (4) are transported in 1/4 ton trucks and communicate by vehicular mounted radios (range 32 kilometers) as compared to the Australian sections (8) which are transported by motor cycle and communicate via portable radios (range 8 kilometers).

CHAPTER IV

DIVISION LOGISTICS

In this chapter similarities and differences in logistics operations within the U. S. and Australian divisions are developed. The logistical functions performed within each division are similar, although different terms are used to describe some of these functions. For example: the U. S. term supply is described by the Australians as requirements, and the U. S. term maintenance is described by the Australians as repair and recovery. The terms transportation, medical service, and miscellaneous services describe the same function in both divisions. Differences in terminology, procedure, and organization are discussed by examining each divisions logistical procedures against the background of the similar logistical functions. The U. S. procedures are considered first, followed by a discussion of the Australian procedures. The chapter concludes with a comparison and analysis of logistical operations in both divisions.

U. S. INFANTRY DIVISION LOGISTICS

Logistical operations within the U. S. infantry division are centralized under the control of the division support command commander. The support command commander accomplishes his responsibilities through employment of support command headquarters, headquarters company and band, medical battalion, supply and transport battalion, and maintenance battalion.¹

¹U. S., Department of the Army, FM 54-2, Division Logistics and Command, 1961, p. 10.

The hub of the U. S. division's logistics operations is the division support area. This area is established by the support command commander in the division rear, after coordination with and approval by the division headquarters. The control element for the division support area is the support command headquarters. Those support command units that are not supporting brigades and logistical elements from higher headquarters are located within the division support area.

Below division level the logistical elements or units to support a tactical unit are called trains. Battalion and company trains are divided into field trains and combat trains.¹ Combat trains constitute that part of the unit trains required for immediate support of combat operations, the remainder are called field trains.

Brigade trains consist of those divisional logistical elements supporting the brigades, plus the field trains of the attached or supporting battalions. All division units employed in the brigade area receive logistical support from the brigade trains. Staff supervision of brigade trains is exercised by the brigade S4.²

LOGISTICS FUNCTIONS

Supply

Items of supply that require special handling within the U. S. infantry division will be discussed first, followed by the general classification of supply items and issue procedure. Cryptographic supplies are

¹Ibid., p. 8.

²U. S., Department of the Army, FM 7-30, Infantry, Airborne Infantry, and Mechanized Infantry Brigades, 1962, p. 76.

handled through signal channels. Electric accounting supplies are handled by the administrative company. Medical supplies are handled by the medical battalion. Medical supplies are normally brought forward by the ambulance units returning from an evacuation mission. Both aircraft parts and repair parts used by the maintenance battalion are obtained through ordnance channels from the general support unit supporting the division.

Supplies are divided into five classes for planning and administrative purposes. Class I are supplies that are consumed at an approximately uniform daily rate under all conditions. (Example--rations.) Class II are supplies authorized by tables of organization of equipment or tables of allowances. (Examples--clothing, equipment and vehicles.) Class III are fuels and lubricants. Class IV are items not otherwise classified or not prescribed for issue by approved tables. (Examples--fortification material or special equipment.) Class V is ammunition of all types.

The supply and service company of the supply and transportation battalion establishes three supply distribution points in the division support area: a class I point, a class II and IV point, and a class III point. In each brigade trains area elements of the supply and service company establish a forward class I distribution point and a forward class III distribution point.

Class I supplies are requested by the division supply and transportation battalion and are subsequently delivered by the army class I supply installation supporting the division. These supplies may be delivered to the division distribution point in the support area, or to forward distribution points in the brigade trains areas. Rations are divided into battalion lots at the class I distribution point, from which battalion transportation picks up the items. The division usually carries reserve rations.

(Example--two reserve rations with units and one on the supply and transportation battalion vehicles.)

Class II supplies are requested by units through the division supply and transportation battalion. Fast moving class II supply items may be delivered by army to the division class II and IV distribution point, or directly to the requesting unit. From the class II distributing point in the division support area, issue is made either directly to the requesting unit or through the forward class I distribution point (material issue at same time as rations are picked up). Slow moving items may be shipped directly from a supply installation outside the field army area to the division. The division does not normally carry a reserve of class II supplies.

Class III supplies are requested through the division supply and transportation battalion. Division transportation moves class III supplies from the army supply point to the class III distribution point in the division support area, and the forward class III distribution point in the brigade trains areas. Unit transportation moves class III supplies from the distribution points to using elements. The division maintains a class III reserve by keeping the maximum number of tankers filled at all times.

Class IV supplies are requested through command channels. When approval is given, these supplies are handled in the same manner as class II.

Issue of class V supplies are controlled by the division ammunition officer (DAO). This control consists of an approval of the unit's request by the DAO, which is necessary before the army supply point will release the ammunition. The DAO is located on a main supply route that is used by all units in the division. Depending on the road net, the DAO may

be located either in the division support area, or as far to the rear as the army class V supply point. Ammunition is loaded on unit transportation for shipment to the user. The only ammunition reserve in the division is the unit basic load.

Maps for the division are procured and distributed by the supply and service company of the supply and transportation battalion.

Transportation

The transportation motor transport company from the supply and transport battalion furnishes cargo and tanker trucks to move and distribute those supplies for which the division has responsibility. This transportation is retained under the control of the support command commander, and if it is used for troop transport the logistics effort will be directly affected.

Maintenance

Within the U. S. division the term maintenance means "all action taken to retain material in a serviceable condition or to restore it to serviceability."¹ U. S. Army maintenance is divided into four categories: organizational, direct support, general support, and depot.² Organizational and direct support maintenance are performed by organic elements throughout the division. Since organizational maintenance is performed by the using organization, it includes daily maintenance by the operator and

¹U. S., Department of the Army, AR 320-5, Dictionary of United States Army Terms, February 1963, p. 223.

²U. S., Department of the Army, AR 750-1, Maintenance of Supplies and Equipment, 30 October 1963, p. 6.

periodic maintenance by the battalion maintenance platoon (or section). Direct support maintenance in the U. S. division is primarily performed by units of the division maintenance battalion.

Maintenance within the U. S. infantry division is accomplished in several ways, depending on type of equipment. Maintenance of cryptographic equipment is performed by the signal battalion, and maintenance of electrical accounting equipment is performed by an element of the administrative company. Only organizational maintenance is performed on medical equipment within the division, and it is the responsibility of the medical battalion. All other direct support maintenance within the U. S. infantry division is accomplished by the maintenance battalion.¹

Normal employment of the maintenance battalion is as follows.² The three forward support companies support the three brigades from a location in the trains areas. The transportation aircraft maintenance company provides support to all organic aircraft at operating sites. Headquarters and main support company, located in the division support area, offers support to units not in the brigade areas, plus backup service to the forward support companies.

Each forward support company establishes a salvage and maintenance forward collecting point in the brigade trains area.³ The main support company establishes a maintenance collection point for the division in the support area and it also provides evacuation service.

¹FM 54-2, op. cit., p. 25.

²U. S. Department of the Army, FM 9-30, Maintenance Battalion: Division Support Command, 1961, p. 7.

³Ibid., p. 69.

Medical service

Medical services in the U. S. infantry division fall into two categories: unit medical service and division level medical service. Unit level service is provided by an organic medical platoon (or section) in each combat battalion. These platoons furnish aid-evacuation teams to companies of the battalion. These teams give first aid and evacuate casualties to the battalion medical aid station, which is operated by the battalion medical platoon. The casualty is first seen by a physician at the battalion aid station. If the casualty must be further evacuated, division level medical service takes over.

Divisional medical service is provided by the medical battalion.¹ Normally one of three medical companies of this battalion supports each committed brigade from its trains area. Within the brigade trains area the medical company establishes a clearing station, and the ambulance platoon evacuates casualties from the unit aid station to this clearing station. The headquarters and support company of the medical battalion provides clearing and ambulance service to division troops from a location within the division support area.

Evacuation from the division clearing stations is the responsibility of the next higher administrative headquarters, (normally Army). If aeromedical evacuation is desired, arrangements can be made through the division surgeon.²

¹FM 54-2, op. cit., p. 22.

²U. S., Department of the Army, FM 8-15, Division Medical Service, Infantry, Airborne, Mechanized, and Armored Divisions, 1961, p. 18.

Miscellaneous services

Water points are established in the division by the engineer battalion.¹ Normally, water points are located within the division support area and brigade trains areas. Units, using organic transportation, will draw water directly from the water point.

Bath facilities will normally be established in the brigade trains area when the supply and service company is augmented with a bath detachment.² A clothing exchange service may be established at the bath point.

In an active combat area the supply and services company will be augmented with a graves registration platoon. This platoon establishes graves registration collection points in the division support area and in each brigade trains area.³ Units are responsible for evacuation of the dead to the graves registration collection points.

AUSTRALIAN DIVISION LOGISTICS

Logistical operations in the Australian division are accomplished by commanders of the following services: Royal Australian Army Service Corps (RAASC), Royal Australian Army Ordnance Corps (RAAOC), Royal Australian Electrical and Mechanical Engineers (RAEME), and the Assistant Director of Medical Service (ADMS) commanding medical units.⁴ These operators are directed through the A and Q branches of the division staff. The

¹FM 54-2, op. cit., p. 55.

²U. S., Department of the Army, FM 10-50, Supply and Transportation Battalion, Infantry, Airborne, Mechanized, and Armored Divisions, 1961, p. 93.

³Ibid., p. 92.

⁴Australia, Military Board, The Pentropic Division in Battle (Provisional), Part 2, Administration, 1961, p. 20.

duties performed by the services commanders will be discussed later.

The hub of the Australian division's logistics operations is the division administrative area controlled by the division rear headquarters. Administrative (combat service support) elements that are not employed forward are located within the administrative area. Below division a task force or battle group administrative area may be established, but this is not habitual. In an administrative area stocks are held on transport or may be transferred from one class of transport to another. When necessary to hold stocks on the ground, a maintenance area will be established on a temporary basis within the administrative area. Maintenance areas can be established only by permission of higher authority.

In the Australian division, distribution to units occurs at delivery points where loads are transferred from supporting to unit transport. "Delivery points may be ammunition, petroleum or supply points or, where more than one type is involved, composite points."¹

LOGISTICS FUNCTIONS²

Transportation

Organic transportation in the Australian division is divided into two categories: first line transport and second line transport. First line transport is all unit transport grouped into three echelons: F echelon contains those vehicles required to accompany the combat troops in action, A

¹Ibid., p. XXV.

²Australian logistics functions are listed in a different sequence than the U. S. logistical functions. This is done for clarity. Terms explained under transportation, repair and recovery, and medical service must be understood before requirements can be intelligently discussed.

echelon contains those vehicles which must be available to support F echelon in action, B echelon contains those vehicles not included in F and A echelon.¹ Second line transport are the vehicles operated by the RAASC. This second line transport is the source of trucks to move and distribute supplies for the division. The divisions supply reserves are held on second line vehicles. Second line transport is controlled by the CRAASC. If second line vehicles are used for troop transport the logistics effort will be directly affected.

Repair and Recovery

The term repair and recovery in the Australian Army describes those functions referred to as maintenance in the U. S. Army. Australian repairs are classified into three groups: unit, field, and base. Unit and field repairs are performed by organic division elements. Unit repairs are minor repairs performed by the operator or support personnel attached to the unit. Field repairs are performed by units in direct support of the using units.

Field repairs to engineer equipment in the Australian division are performed by the Royal Australian Engineers. Field repairs of signal equipment are performed by the Royal Australian Signals. All other field repairs are the responsibility of the RAEME.

RAEME units are organized into light aid detachments (LAD), a light aircraft company workshop, a transport company workshop, and three infantry workshops. LADs are attached to most elements of the Australian division and assist the element with unit repairs and recovery. Both unit

¹Ibid., p. 35.

and field repairs are provided to the light aircraft squadron and the RAASC transport companies by their respective attached RAEME workshops. Field repairs for other elements of the division are performed by the three infantry workshops. These infantry workshops are located within an established administrative area(s) from which they can best support the division. Normally, control of the infantry workshops is retained by the CRAEME.

Recovery of disabled equipment in the Australian divisions is grouped into first line recovery and second line recovery.¹ First line recovery is the responsibility of the unit and attached LAD, and equipment is recovered to the unit area or to an equipment collecting point. Second line recovery is the evacuation of equipment from unit areas or equipment collecting points, and is the responsibility of the CRAEME.

Medical Service

Organization of medical units in the Australian division is very similar to the organization of medical units in the U. S. division. Unit medical service is provided by organic medical units assigned to each major element of the Australian division. These units furnish first aid and evacuation to the regimental aid post (RAP), which is established in each battalion area. The casualty is first seen by a physician at the RAP. If the casualty must be further evacuated, division level medical service takes over.²

Division level medical services are performed by three identical medical units called field ambulances. These units are commanded by the

¹Ibid., p. 86.

²Ibid., p. 63.

Assistant Director of Medical Service (ADMS).¹ Each field ambulance has two medical companies. Each of these companies can: establish an advance dressing station (ADS), collect and transport casualties from the RAPs, establish a casualty collecting post (CCP) where casualties are held pending evacuation, and hold casualties for a short period of time. These medical companies are situated where they can best support the division.²

Evacuation from the CCP to the rear is the responsibility of the next administrative headquarters. If aeromedical evacuation is desired arrangements can be made through the ADMS.

Requirements

The term requirements is used by the Australian Army to mean about the same as the broad term supply in the U. S. Army. It includes ammunition; petroleum, oils, and lubricants (POL); supplies; and stores. "Supplies consist of rations, forage, expense items, heat and lighting items and certain sundry items (for example, cigarettes and rum)."³ "Stores are materiel other than supplies and POL. They comprise ordnance stores, engineer stores, and medical and dental stores."⁴

The CRAASC is responsible for moving the vital daily requirements of the division by second line transport from the refilling points in the rear of the division to the forward delivery points. These requirements include ammunition, POL, and supplies.⁵ Sufficient ammunition is obtained

¹Above, p. 13.

²The Pentropic Division in Battle (Provisional), Part 2, op. cit., p. 66.

³Ibid., p. xxxii.

⁴Ibid., p. xxxi.

⁵Ibid., p. 36.

to replace expenditures. RAASC second line transport brings ammunition as far forward as practicable. It is desirable to haul mortar, tank, and artillery ammunition to the firing site. Small arms ammunition is normally transferred to the units A echelon vehicles at the ammunition point in the forward unit area. POL is transported as far forward as practicable in bulk. Petroleum points are established to fill empty tanks of unit vehicles or bulk tanks may be carried to the equipment. Supplies (rations) are transported to the division administrative area by second line vehicles, where they are divided into unit lots. These unit supplies are then transported, again in second line transport, to delivery (supply) points supporting the units. From the delivery point the supplies are moved by unit transportation.

Engineer, signal and ordnance stores (other than ammunition) are shipped from depots directly to the division administrative area. Ordnance stores are normally delivered to and controlled by the division ordnance company. Signal stores are controlled by the administrative squadron of the signal regiment. The engineer field park squadron will handle the distribution of engineer stores. The field ambulances handles medical stores which are normally brought forward by the evacuation units supporting the division.

Ordnance stores include equipment, spare parts, and clothing. The spare parts stock and replenishment is handled by an ordnance stores section attached to each of the RAEME workshops. A limited clothing stock is maintained on unit transportation of the division ordnance company.¹

¹Ibid., p. 73.

Miscellaneous Services

Water points are established by the engineer field park squadron, from where it is collected by unit transportation. If water is not available in the vicinity of the units, the CRAASC is responsible for transporting water forward and establishing water distribution points.¹

Bath points are established by the division ordnance company. Underclothing is exchanged at the bath point.

In wartime a graves registration unit will augment the Australian division. This unit works directly under the control of A Branch of the division staff.

COMPARISON AND ANALYSIS

The basic difference in the logistics of the U. S. and Australian infantry divisions is in organization. The U. S. infantry division uses centralized control of its logistical operations, while the Australian division uses decentralized control.

The U. S. division's logistical operations are placed under a single individual, the support command commander. This system frees the G4 from the day-to-day problems of logistical operations and allows him to concentrate on logistical planning. Placing the major logistical operation elements under the support command eliminated the requirement for each of the element commanders to serve as special staff officers. All current operating logistical data is maintained by the support command staff and furnished to the division staff as required.

The Australian division's logistical operations are decentralized

¹Ibid., p. 120.

to the commanders of services, CRAASC, CRAAOC, CRAEME, and ADMS. Under this system the A and Q branches of the division staff maintain staff responsibility for the control of logistical operations. Each commander of services is also an advisor for his service to the division staff.

Procedures used for the procurement and distribution of all types of materials are different in the two divisions. This factor, along with the difference in types of equipment (developed in chapters II and III), necessitates the use of two logistical systems to support a combined force of U. S. and Australian divisions.

If it were necessary to consolidate the source of some classes of supply to support a U. S. -- Australian combined force, petroleum, rations, fortification materials, and ammunition should be considered. The Australians can use U. S. POL products without difficulty, and rations pose no special problem. The U. S. ammunition supply system could supply ammunition for the organic weapons of the Australian infantry battalion, and the Australian division artillery. Ammunition for Australian tank units, however, would have to be supplied from other than a U. S. source.

A logistical planner, involved with the U. S. and Australian divisions, should know meanings of respective logistical terms. Although the differences are seemingly minor, a failure to appreciate them could result in serious misunderstandings. For example, an Australian staff officer asks his U. S. counterpart, "What is the status of maintenance in the U. S. division?" (Meaning the status of all supply, repair, and personnel replacement action taken in preparation for a mission.) And the U. S. staff officer replies, "We have no problems in maintenance." (Meaning no problem in retaining material in a serviceable condition.)

There are many differences in the organization, procedures, and

terminology used by the U. S. and Australian divisions in the field of logistics. Yet, the functions performed by each division, and the overall results, are essentially the same. The key to smooth logistical operations in a combined force of U. S. and Australian divisions is a mutual understanding of the logistical systems of both divisions.

CHAPTER V

OPERATIONS DOCTRINE

Underlying operational doctrine of both the U. S. and Australian Armies are principles which have been defined as "fundamental truths governing the prosecution of war."¹ These are the principles of war. The U. S. Army proclaims nine principles, and the Australian Army proclaims ten. Three principles (offense, security, and surprise) are common to both Armies. Five principles have different titles but mean essentially the same thing in both Armies. They are: U. S. objective compared to Australia aim, U. S. mass compared to Australia concentration of force, U. S. economy of force compared to Australia economy of effort, U. S. maneuver compared to Australia flexibility, U. S. unity of command compared to Australia cooperation. The principle of simplicity as proclaimed by the U. S. Army is not included as a principle by the Australian Army. And, the principles of maintenance of morale and administration as proclaimed by the Australian Army are not included as principles by the U. S. Army.^{2,3}

TERMINOLOGY

In this section the U. S. doctrinal terms are listed first, followed

¹U. S., Department of the Army, FM 100-5, Field Service Regulations - Operations, 1962, p. 46.

²Ibid., p. 46-48.

³Australia, Military Board, The Pentropic Division in Battle, (Provisional), Part 1, Organization and Tactics, 1960, pp. 61-63.

by the Australian synonym in parenthesis. Doctrinal terms common to both services are not listed.

Attach (Under command)

Temporary placement of a unit under command of another unit. The commander to whom the attachment is made has command responsibility to include administrative support, training and operations, unless limitations are stipulated in the attachment order.^{1,2}

General Support (In support)

Support which is given to the command as a whole. Command of the supporting unit remains with the parent headquarters.^{3,4}

Reinforcing (At priority call)

A tactical artillery mission where the reinforcing unit answers calls for fire from the reinforced unit on first priority. The reinforcing unit may answer calls for fires to other units on second priority.^{5,6}

¹U. S., Department of the Army, AR 320-5, Dictionary of United States Army Terms, 1963, p. 51.

²Australia, Military Board, The Pentropic Division in Battle (Provisional), Part 5, Artillery, 1961, p. 19.

³AR 320-5, op. cit., p. 178.

⁴The Pentropic Division in Battle (Provisional), Part 5, op. cit., p. 18.

⁵AR 320-5, op. cit., p. 44.

⁶The Pentropic Division in Battle (Provisional), Part 5, op. cit., p. 19.

Supporting fires (Covering fires)

Fires to assist the supported troops. These fires may be controlled by time, observation, or called for by supported troops.^{1,2}

Concentration (Defensive fires)

The term "concentration" is used by both U. S. and Australian forces to describe an area designated for future reference as a possible target in offensive operations. In defensive operations, the Australians use the terms defensive fires in depth, and close defensive fires, to describe those areas that the U. S. covers with concentrations. The Australian term defensive fires (SOS) is a prearranged fire that covers the approaches to the defended locality. Defensive fires (SOS) correspond to the U. S. use of barrages.

Barrage

The U. S. definition of this term is "a prearranged barrier of fire . . . designed to protect friendly troops . . . by impeding enemy movements across defensive lines or areas."³ The Australians use the term to describe "a moving belt of fire providing a screen behind which attacking troops advance."⁴ (Note that this term defines a defensive fire for the U. S. force as opposed to an offensive fire for the Australian force.)

¹AR 320-5, op. cit., p. 44.

²The Pentropic Division in Battle (Provisional), Part 5, op. cit., p. 26.

³AR 320-5, op. cit., p. 57.

⁴The Pentropic Division in Battle, (Provisional), Part 5, op. cit., p. 27.

Line of Departure (Start Line)

A line, usually a recognizable terrain feature, designated to coordinate the beginning of an attack.^{1,2}

Attack Position (Forming up place)

The location where attacking troops deploy. This is the last covered and concealed location occupied prior to crossing the line of departure. U. S. doctrine uses this control measure only when necessary. Australian doctrine directs habitual use of this control measure.^{3,4}

Assembly Area (Concentration Area)

An area where a command assembles and prepares for further action.⁵ Australian doctrine associates the term assembly area with a battalion size force, and the term concentration area with a division size area.⁶

Phase Line (Report Line)

A line, easily recognizable on the ground, at which units report their progress. These lines are given names to facilitate identification

¹AR 320-5, op. cit., p. 217.

²The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 105.

³U. S., Department of the Army, FM 61-100, The Division, 1962, p. 90.

⁴The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 105.

⁵FM 61-100, op. cit., p. 89.

⁶The Pentropic Division in Battle (Provisional), Part 1, op. cit., pp. 104-195.

and reporting.^{1,2} (Phase lines are used by the Australians to delineate phases of a deliberately phased operation.)

Mobile defense /Area defense (nuclear)/

A defense in depth where the primary objective is the destruction of the enemy by the use of a strong mobile reserve. Suitable terrain in depth and mobility are essential for the conduct of this type of defense.^{3,4}

Combat outpost (Screens)

The combat outpost is a security element forward of the defensive position. The primary purpose of the combat outpost is to provide warning and deny direct enemy observation of the defensive position. In the U. S. division the brigade commander directs the location of the combat outpost and it is manned and controlled by elements of the forward battalions.⁵ In the Australian division the infantry battalion (battle group) determines the location of the combat outpost and controls its actions based on guidance from the division commander.⁶

¹FM 61-100, op. cit., p. 89.

²The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 84.

³FM 61-100, op. cit., p. 130.

⁴The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 183.

⁵U. S., Department of the Army, FM 7-20, Infantry, Airborne Infantry, and Mechanized Infantry Battalions, 1962, p. 164.

⁶The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 160.

Forward Edge of the Battle Area (Forward defended localities)

The forward dispositions of defensive units excluding the area in which covering and screening forces are deployed.^{1,2} The Australian definition further defines a defended locality as "an area on the ground organized for all around defense, into which penetration is not acceptable."³

Coordination Point (Junction point)

A point established where adjacent commanders make contact for the purpose of coordination and control.^{4,5} The coordination point is located on lateral defense boundaries where the boundaries cross the forward edge of the battle area, the combat outpost line, and the covering force positions.

General Outpost (Covering troops)

A security force deployed forward of the battle area to protect the main force from enemy observation and surprise.^{6,7} The Australian term of covering troops may apply to the security force provided by the division or provided by higher headquarters. General outpost applies only

¹AR 320-5, op. cit., p. 172.

²The Pentropic Division in Battle (Provisional) Part 1, op. cit., p. 165.

³Australia, Staff College, Lesson Plan Defensive Operations 1, The Defence, 1962, p. 4.

⁴AR 320-5, op. cit., p. 112.

⁵The Pentropic Division in Battle (Provisional) Part 1, op. cit., p. 165.

⁶AR 320-5, op. cit., p. 176.

⁷The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 160.

to the security force provided by the U. S. division. U. S. security troops furnished by a headquarters above the division are called covering forces. Either division may be the covering force for a larger force.

Counterattack (Local counter attack, deliberate counter attack)

In counterattacks the Australians divide the action into two types. The local counterattack occurs at company level when the enemy penetration is limited and the local friendly units can seize the initiative before the enemy has had a chance to consolidate. The local counterattack is not deliberately planned but is a result of spontaneous action by the company commander to seize the initiative.¹ The Australian division may employ another action, counter penetration, prior to the launching of the deliberate counter attack. In the counter penetration action, local reserves and re-deployed armor units are required to contain successfully the enemy penetration. The Australian deliberate counterattack is coordinated at division level, even though it may have been planned and will be executed at battalion level.

Key Terrain (Vital ground, good tactical ground)

The U. S. definition of key terrain, "any locality, or area, the seizure or retention of which affords a marked advantage to either combatant,"² encompasses the meaning of both the Australian terms. Vital ground defines ground that if captured by the enemy will render the defender incapable of performing his mission. Good tactical ground is that ground

¹Ibid., p. 179.

²AR 320-5, op. cit., p. 210.

that can provide units the best position from which to defend the vital ground.¹

OFFENSE

The concept of using firepower and maneuver in the offense is the same in both the United States infantry division and the Australian division.^{2,3} Fire plans coordinate all available firepower into the overall offensive plan. Doctrine of both divisions provide guidance for planning preparatory fires, harassing and interdiction fires, countermortar fires (counter bombardment), supporting (covering) fires, and defensive fires to cover reorganization.^{4,5}

The basic forms of maneuver used in both divisions are the envelopment and the penetration.^{6,7} Doctrine for each division recognizes the double envelopment and the turning movement as a variation of the envelopment.^{8,9} Australian doctrine includes infiltration as a third form of

¹The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 152.

²FM 61-100, op. cit., p. 65.

³The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 75.

⁴FM 61-100, op. cit., p. 85.

⁵The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 101.

⁶FM 61-100, op. cit., p. 67.

⁷The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 76.

⁸FM 61-100, op. cit., pp. 106-108.

⁹The Pentropic Division in Battle (Provisional), Part 1, op. cit., pp. 126, 127.

maneuver.¹ U. S. doctrine describes infiltration as "a variation of the penetration."² and as "a technique of movement used in conjunction with offensive operations."³

Three fundamentals of offensive action are common to both divisions: concentration of superior combat power at the decisive point, fire superiority to be gained and maintained throughout the attack, and exploitation of any tactical advantage.^{4,5} Other fundamentals of offensive action differ primarily in terminology. Each division may follow its prescribed offensive fundamentals without causing any operational conflicts within a combined force environment.

Common offensive operations conducted by both divisions include: making contact, fighting for information, exploiting success, and pursuing the enemy. U. S. forces describe the action of making contact with the enemy as the "advance (movement) to contact,"⁶ while Australian forces call the same action "the advance."⁷ What the U. S. force calls "reconnaissance in force"⁸ the Australians call "fighting for information."⁹ "Exploitation"

¹Ibid., p. 76.

²FM 61-100, op. cit., p. 67.

³Ibid., p. 109.

⁴Ibid., p. 66.

⁵The Pentropic Division in Battle (Provisional), Part 1, op. cit., pp. 97, 98.

⁶FM 61-100, op. cit., p. 90.

⁷The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 77.

⁸FM 61-100, op. cit., p. 124.

⁹The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 75.

and "pursuit" are terms which mean the same in both the U. S. infantry division and the Australian division.^{1,2}

There are no significant differences in offensive doctrine pertaining to basic concepts, fundamentals, and types of offensive operations of the compared divisions. There is, however, a possibility that misunderstandings may arise owing to the different terminology used to describe similar offensive actions. This misunderstanding stems from the Australian technique of dividing any attack (offensive operation) into stages. These stages are: preparatory stage, break-in, dog fight, and break-out.³ They are used for convenience in describing the development of the attack and will not affect planning for a combined U. S. -Australian force, since "in practice these stages will merge into one another."⁴

The preparatory stage covers all planning and movement done by the attacking force prior to the attack. The break-in is similar to phase one of the penetration where the enemy's defensive position is ruptured.⁵ The dog fight is similar to phases two and three of the penetration when the gap in the enemy's defense is widened and objectives are seized behind the enemy's position.⁶ The break-out is similar to the beginning of the exploitation where pressure is maintained on the enemy to prevent him from reorganizing a defense.

Techniques for controlling offensive operations are different in both divisions. Generally, the Australian division's attack plan will

¹FM 61-100, op. cit., pp. 113, 116.

²The Pentropic Division in Battle (Provisional), Part 1, op. cit., pp. 140, 142.

³Ibid., p. 98.

⁴Ibid.

⁵U. S. doctrine divides the penetration into three phases.

⁶Ibid.

involve seizure of intermediate objectives, with a separate phase of the attack associated with seizure of each intermediate objective. The U. S. division's attack plan will normally involve seizure of one objective, and the operations will not be phased. However, under certain circumstances, either division may take the other's approach with respect to objectives and phasing.

DEFENSE

There is a difference in the scope of defensive operations prescribed for U. S. and Australian divisions. The latter incorporates "withdrawal and delaying defence" as integral parts of defensive operations.¹ U. S. doctrine classifies all types of withdrawals and delaying actions as retrograde operations.²

The U. S. area defense is the equivalent of the Australian area defense (nonnuclear), and the U. S. mobile defense is the equivalent of the Australian area defense (nuclear). Concepts of organizing the defense to include a security force, a forward position, and a reserve are similar in both divisions. The fundamental considerations of defensive combat differ only in wording. Each division may follow its prescribed defensive fundamentals without causing any operational conflicts within a combined force environment.

RETROGRADE OPERATIONS

Although the Australian doctrine considers withdrawals and delaying

¹The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 149.

²FM 61-100, op. cit., p. 170.

actions under defensive operations, and U. S. doctrine considers them as retrograde operations, the purpose and basic considerations are similar in both cases. Again there is a difference in terminology. U. S. doctrine describes two types of withdrawals -- night and daylight.¹ Australian doctrine classifies the withdrawal as a type of defensive operation, and outlines special procedures to be adopted if the withdrawal is conducted "by day in open country."² Similar techniques and procedures are used in execution of withdrawals at infantry battalion level in each division.^{3,4} "Delaying action" in U. S. doctrine is equivalent to "delaying defence" in Australian doctrine. Delaying operations conducted by both divisions are based on the basic principle of inflicting maximum damage on the enemy without decisive engagement. The same doctrinal terms are used in describing delay on successive position and delay on alternate positions.

RELIEF OPERATIONS

Relief in place, passage of lines, and withdrawal through a rearward position are covered in U. S. doctrine as types of relief operations.⁵ In Australian doctrine, passage of lines, passage through a rearward position, and relief in place are considered as separate tactical operations.⁶

¹Ibid., p. 179.

²The Pentropic Division in Battle (Provisional), Part 1, op. cit., p. 196.

³Australia, Military Board, Infantry Training, Vol IV, Part 1, The Battalion (Provisional), 1961, p. 342.

⁴U. S., Department of the Army, FM 7-20, Infantry, Airborne Infantry, and Mechanized Infantry Battalions, 1962, p. 203.

⁵FM 61-100, op. cit., pp. 198-207.

⁶The Pentropic Division in Battle (Provisional), Part 1, op. cit., pp. 145, 201, 203.

The main considerations, planning procedures, and methods of conduct of the relief are similar in both doctrines. A relief involving a U. S. and an Australian division would be similar to a relief involving two types of U. S. divisions. It would require detailed planning to include command liaison, mutual cooperation, and coordination, none of which would present any insurmountable problems.

ORGANIZATION FOR COMBAT

There is no fixed grouping of tactical units in either the U. S. or the Australian division. Each division can arrange its tactical units to best fit a given tactical situation. The general principles followed by each division in determining an organization for combat are listed below.

U. S. Brigade

Each committed brigade in the U. S. infantry division normally has a combination of infantry and tank units attached to it. The exact mix depends on the mission and the characteristics of the terrain in the planned zone of action.

The brigade habitually has one 105mm howitzer battalion in direct support. Other artillery units may be assigned a mission of reinforcing the direct support battalion, general support reinforcing, or general support.

The reconnaissance squadron (or troop) may be attached to a brigade. This attachment is normal if the division commander assigns the brigade a mission of protecting a flank.

One company of engineers is placed in support of the brigade. Additional heavy engineer equipment, to include bridging, is normally

attached to this engineer company by the division engineer battalion.

A forward command communications section is placed in direct support of the brigade. This section operates the division command operations net for the brigade and connects the brigade into the division area communications system. General support signal service is provided to all units in the brigade area by the signal center platoon.

One platoon of military police normally supports each committed brigade.

Support command units usually found in each brigade trains area are: a company from the medical battalion; a forward support company from the maintenance battalion; a supply section, a bath section, and a graves registration section from the supply and service company of the supply and transport battalion. The division engineer battalion normally will establish a water point within the brigade trains area.

If the employment of the brigade places any of its supporting units in a position where the parent headquarters of the supporting unit cannot control them, these units are attached to the brigade.

Australian Infantry Battalion (Battle Group)

The organization for combat of the Australian division is centered around the infantry battalion. Normally the Australian infantry battalion is employed as a fixed unit (five rifle companies) and supported by other units of the division.

A tank squadron (or troop) normally supports an infantry battalion. The size of the tank unit depends on the mission and the characteristics of the terrain in the planned zone of action.

Each committed infantry battalion has an artillery field regiment

in direct support. Other artillery units are at priority call or in support.

One engineer field squadron normally supports each infantry battalion. The engineer field park squadron furnishes the field squadron with required heavy equipment and bridging.

Signal support of the infantry battalion habitually is provided by the infantry battalion signal troop.

One section of provost troops supports each committed battalion.

A field medical company from one of the field ambulances provides division level medical service to the infantry battalion.

One advanced workshop detachment of Royal Australian Electrical and Mechanical Engineers can be formed to support a battalion, if the infantry workshops cannot support the battalion from the division administrative area.

Ideally, all combat units are placed in support of the battalion,¹ if the parent headquarters cannot control the support unit it is then placed under command of the battalion. When combat units are placed under command of the battalion, the infantry battalion then is called a battle group.

COMBINED FORCE OPERATIONS

A hypothetical combined corps of U. S. and Australian divisions is used to illustrate some of the problems which might develop when such a force is employed. The corps headquarters is assumed to be manned with a combined staff of U. S. and Australian personnel. Corps troops are

¹Above, p. 102.

comprised of U. S. and Australian nondivisional units. Combat service support is a national responsibility, and two separate systems (U. S. and Australian) of combat service support are functioning. Each force is equipped as discussed in chapters two and three.

The area of operation is in Southeast Asia, and it is assumed that there is considerable variation in the type of terrain. The Australian division, with its relatively light vehicles and equipment, is best suited to operate in the more difficult terrain. The U. S. infantry division, with its relatively heavy vehicles and equipment, is best suited to operate in the more open terrain, where its two tank battalions can be used to best advantage.

Coordination Prior to Operations

The combined corps headquarters must establish a standing operations procedure for use by both the U. S. and Australian division. This document must standardize tactical control measures and operational terms.

A system must be developed for the exchange of liaison officers and communications between the two divisions. The principle of establishing communications from left to right is the same in both U. S. and Australian doctrine. Adequate lateral communications between divisions can best be maintained by assigning a U. S. signal team with cryptographic equipment to the Australian division headquarters. This arrangement eliminates security problems associated with U. S. cryptographic equipment and provides continuous lateral cryptographic communications. A mutual exchange of liaison officers between the U. S. and Australian divisions is essential for smooth operations. These liaison officers must be familiar with the doctrine and procedures of both forces. The minimum requirement is to

exchange liaison officers at division level; however, it is highly desirable to exchange liaison officers between adjacent U. S. brigades and Australian battalions. Personal coordination must be effected by commanders of the flank companies of adjacent U. S. and Australian units.

Each Army has a procedure for requesting and controlling tactical air support. The U. S. and Australian procedures are essentially the same; however, the detailed coordination of air space, radio procedures, request channels, and the use of forward air controllers must be coordinated prior to operations. This coordination of tactical air support must include air reconnaissance as well as offensive strikes.

Some operations involving common doctrine require exhaustive planning and coordination prior to execution. These are: corps level counterattacks, passage of lines, relief, delaying action, and link up. It is quite likely that the first soldier-to-soldier level coordination between the U. S. and Australian divisions will take place in one of these operations. Detailed plans for such an operation must be developed in sufficient time to allow for thorough reconnaissance, liaison, and coordination. Items requiring special attention are: methods of controlling supporting fires, areas of responsibility (to include effective times and command structure), traffic control, and the overall tactical and combat service support plan.

During Operations

The differences between the U. S. and Australian division during operations are the result of differences in organization and equipment of the two forces. Problem areas will revolve around how dismounted infantry, the pace-setting elements of both divisions, can be controlled and/or

supported under operational conditions.

The different methods used to control operations in the two divisions must be recognized. The five basic maneuver headquarters give the Australian division commander some flexibility in the manner in which he employs his forces. However, the fixed nature of each of the Australian infantry battalions does not provide the flexibility of tailoring major forces to fit the mission, such as that enjoyed by the U. S. division.

The three brigade organizations of the U. S. division reduces the number of combat unit commanders directly controlled by division headquarters. Also the support command organization places the operational responsibility for combat service support on one commander. The resultant reduction in the span of control at division level provides for effective centralized control.

Built into the U. S. system is one additional link in the chain of command -- the brigade. This "extra" headquarters requires additional time for command and staff actions. Consequently the Australian division might react quicker under the same operational conditions.

Trafficability in the area of deployment will affect the ability of each division to support its forces. If the terrain and vegetation do not restrict the use of vehicles, the U. S. infantry division has several distinct advantages over the Australian division. Among them are: longer range vehicular mounted communications, more tank strength, a stronger reconnaissance element, and heavier fire support. If, on the other hand, the terrain and vegetation restrict the use of vehicles, the Australian division has an advantage in that it can support its forces with existing equipment better than the U. S. division can under like circumstances.

¹Above, p. 35.

Planning and conduct of operations in a combined corps of U. S. and Australian divisions is facilitated by the existence of similar tactical doctrines applicable to each respective division. All commanders and staffs of, and within, the combined corps must understand that differences exist in terms used by each force to express similar tactical actions. These commanders and staffs must also understand that although similar tactical doctrines exist for both divisions, the application of this doctrine to units which are dissimilar in organization and equipment will produce different results.

CHAPTER VI

APPRAISAL

Formation of a combined force of U. S. and Australian divisions, to implement provisions of the ANZUS treaty, is a possibility. Components of such a combined force would face some unusual operational and environmental challenges. To minimize problems which may arise, it is essential that a mutual understanding of the similarities and the differences of the participating forces be achieved prior to formation of such a combined force. Significant similarities and differences, as determined from the comparisons and analyses in the foregoing chapters, are discussed in the hope that they may lead to improved understanding in the event that a combined force is assembled.

SIGNIFICANT SIMILARITIES

Common Language

An important asset to assist commanders in resolving operational problems is the common basic language. It is a paradox, however, that problems arise because both forces are English-speaking. For example, the terms maintenance, supply, barrage, and concentration mean something altogether different to an Australian soldier than to an U. S. soldier. Such differences in terminology can be clarified and should present no insuperable obstacles. On the other hand, standardization of operational procedure, detailed coordination, and understanding of each others problems are

enhanced because both forces speak the same basic language.

Tactical Doctrine

There are no significant differences in the offensive, defensive, and relief operations doctrines prescribed for the U. S. and the Australian divisions.¹ When the Australian Army adopted the U. S. Pentomic division structure as a model for the organization of the Australian PENTROPIC division it adopted basic U. S. Army tactical doctrine as well. From an operations standpoint the existence of similar tactical doctrines is a highly significant similarity between the two divisions.²

Communications

Supplementing the common language and common doctrine are organic communications systems that provide for establishing lateral radio communication between adjacent units at all levels of command from company to division.³ Below division level the ability to establish lateral radio communications is limited to the range and frequency span of radios used by the Australians.⁴

Rifle Platoons

The rifle platoon is the largest infantry unit organic to both divisions that is similar in terms of combat strength (personnel and weapons).⁵

¹Above, pp. 108-113.

²Above, pp. 101-119.

³Above, p. 81.

⁴Above, pp. 38, 39.

⁵Above, pp. 36-38.

As such, the rifle platoon can be used as the common denominator in determining relative combat strength of other infantry units.

Combat Service Support

Selected weapons and their spare parts are standard items in both divisions. (The M2A2-105mm howitzer, the M-60 machinegun, the 81mm mortar, the 106mm recoilless rifle, the 3.5 inch rocket launcher, and their spare parts.) Ammunition is compatible in some areas. The U. S. supply system handles all types of ammunition required for the weapons in the Australian infantry battalion and the Australian division artillery.¹

Staffs

The United Kingdom Army staff organization and procedures have been maintained by the Australian Army. This staff organization is somewhat different from U. S. staff organization; however, the collective functions performed by each staff are similar. (An exception to this similarity is present in the staff responsibilities for logistics at the division level. In the U. S. division the support command commander has command responsibility for logistical operations, and the division G4 has staff responsibility for logistical planning.² In the Australian division the A and Q branches of the division staff have staff responsibility for both logistical planning and logistical operations.³) Each staff can perform its functions in a combined force environment without modification.

¹Above, p. 99.

²Above, p. 98.

³Above, p. 99.

SIGNIFICANT DIFFERENCES

Most differences that exist between the U. S. infantry division and the Australian division result from a difference in organizational objectives. The Australian division was organized specifically for fighting in a limited geographical area, Southeast Asia. Consequently, this division is designed to be as light as possible without sacrificing firepower in its rifle units. The overall result of this organization has been evaluated by M. F. Brogan: "In terms of effective density of firepower per capita the Pentropic Division is probably amongst the most lethal organizations at present feasible."¹ In contrast, the U. S. division is organized as a general purpose division suitable for operations anywhere in the world. Additional and substitute items of equipment and specialized training may be required if the U. S. infantry division is to be employed in an area of extreme terrain and weather conditions.²

Combat Elements

A principal difference in the two divisions is in the organization of infantry units above platoon level. Australian rifle companies have four rifle platoons while U. S. rifle companies have three, and Australian infantry battalions have five rifle companies and the U. S. infantry battalions have three. The overall result is that the Australian infantry battalion has more than twice the number of rifle platoons of the U. S. infantry battalion. Overall, there are 72 rifle platoons in the U. S.

¹M. F. Brogan, "Comparative Firepower -- Tropic and Pentropic Divisions," Australian Army Journal, CXLVII, (August, 1962), p. 24.

²U. S., Department of the Army, FM 61-100, The Division, January 1962, p. 229.

division and 100 rifle platoons in the Australian division.¹

The U. S. infantry division used in this thesis (with two tank battalions) has approximately twice the tank strength of the Australian division. To evaluate this major difference, one must consider that the U. S. infantry division can be tailored with some other mix of combat battalions. The most useful comparison of tank strength would be that of the Australian division's organic armored regiment, which is approximately equal in tank strength to one U. S. tank battalion.²

A comparison of reconnaissance units of the two divisions reveals significant differences in capabilities. First, the U. S. armored cavalry squadron, with more than twice the firepower of the Australian reconnaissance squadron, has the capability of being employed as a major combat element. Second, the air cavalry troop in the U. S. squadron provides aerial fire support from twenty-six armed helicopters in addition to an aero-rifle platoon (four--nine man rifle squads). This aerial support in the U. S. division provides the commander with a capability unavailable to the Australian division commander.³ Aerial support is of significant importance in jungle operations, where ground mobility is restricted by vegetation and terrain.

Control of the combat elements in each division is difference. The tank and infantry elements of the U. S. division are normally controlled by attachment to the three brigade headquarters, the mixture of units being commensurate with the assigned mission. The brigade can cross attach

¹Above, pp. 33-39.

²Above, pp. 46-47.

³Above, pp. 54-56.

tank and infantry units to form task forces as required. Control of Australian combat elements centers around the five infantry battalions, which are normally controlled directly by the division headquarters. The armored regiment of the Australian division may be employed as a regiment, or units of the regiment may be allocated to support infantry battalions.

Combat Support Elements

In the nonnuclear category, the U. S. infantry division has light, medium and heavy artillery as compared to only light artillery in the Australian division. In a nuclear environment, there is an even wider discrepancy, for the Australian division does not possess a nuclear delivery capability.¹

Aviation in the two divisions is quite dissimilar. The first significant difference is in numbers and types of aircraft. The 76 aircraft in the U. S. division, excluding aircraft in the air cavalry squadron, consists of 6 fixed wing airplanes and 70 helicopters (32 utility and 38 observation). Organic aircraft in the Australian division consist of 24 fixed wing airplanes and 22 observation helicopters. The second significant difference is in the lift capacity of the 32 utility helicopters in the U. S. division. These helicopters give the division the capability of airlifting the assault elements of a rifle company in one lift and also provide a limited capability for aerial resupply.² Like the capability of the U. S. air cavalry troop, this major airlift capability becomes significant in jungle operations.

The difference in organic engineer capability between the compared

¹Above pp. 63-64.

²Above pp. 69-70.

divisions is limited to bridging capacity. The U. S. infantry division engineer battalion can provide one 144 meter class 60 bridge, as compared to one 30 meter class 35 bridge provided by the Australian division engineers.¹

Combat Service Support

Organization, terminology, and procedures in the logistical systems of the U. S. and Australian divisions are different. Organizationally, the U. S. division's logistical operations are centralized under the commander of the support command, and the Australian division's logistical operations are decentralized among the commanders of the supporting services and the A and Q branches of the division staff. Each division uses a different procedure for requesting and distributing supplies. This procedural variation, plus a lack of standardization of equipment and spare parts in the two divisions, would dictate the use of separate national logistical systems. A number of similar terms used in describing the logistical systems of the two forces have different meanings. A reconciliation of these terms is a necessity if logistics staff officers of a U. S. - Australian combined force are to understand each other.²

Ground Transport

The Australian division is equipped with ground transport which they consider best for tropic areas. This transport differs from the U.S. equipment in that it is generally lighter, all reconnaissance elements use

¹Above, pp. 75-76.

²Above, pp. 85-100.

wheeled vehicles (armored cars, scout cars, and personnel carriers), and tank units are provided with tracked resupply vehicles.

Advantages and disadvantages of each division's organic ground transportation varies with the area of operations. In jungle areas, where the only routes of communications are narrow trails, the Australian division appears to be better equipped to support its troops. In more open terrain, where larger vehicles can be employed, the U. S. division will be able to move more tonnage and thus provide more support to its troops.

CONCLUSIONS

Significant similarities which provide for compatibility between the U. S. infantry division and the Australian division are; existence of a common language, existence of similar tactical doctrines, and existence of communications systems that provide for lateral radio communications.

Significant differences between the U. S. division and the Australian division are divided into two categories. First, those differences in terminology, procedures, and methods used to control major maneuver elements. Second, those differences in organization that effect each division's capability to move and shoot.

Differences in terminology apply to both administrative and tactical terms and offers a potential problem area to the uninformed commander and staff officer. Effective verbal communications within a U. S. -Australian combined force will depend on a thorough understanding of terminology. Most procedural differences between the two divisions are in the field of combat service support. These differences are significant in that they require two separate national supply systems to support a U. S. -Australian combined force. Also commanders and staff officers must realize that there are organizational differences in the established command and control arrangements

within the U. S. and Australian divisions. Reaction time may be affected by an additional control headquarters in the U. S. division, and by a difference in staff organization of the two divisions.

Although each division is basically foot mobile, its mobility still depends upon the movement of heavy weapons, communications, and supplies necessary to sustain the division. Transport is generally lighter in the Australian division, since it was adopted for its mobility in tropic areas. Transport in the U. S. division is heavier and requires a better road system than does the Australian transport. Therefore, it is concluded that in jungle areas the Australian division is better equipped to support its troops with organic ground transport; whereas in open terrain the U. S. division is better equipped to support its troops with organic ground transport. In any type terrain the U. S. division has a significant helicopter lift capability, as compared to that of the Australian division.

The difference in each division's ability to "shoot" is in the fire support available to the infantry. There are proportionately more antitank weapons, mortars, and tanks in the U. S. division than in the Australian division. There are more artillery field pieces in the Australian division than in the U. S. division; however, only light artillery is organic. The Australian division artillery has no nuclear delivery means. U. S. division artillery, though smaller in numbers of field pieces, has a nuclear delivery capability in addition to the organic nonnuclear light, medium and heavy artillery. Therefore, it is concluded that organic equipment in the U. S. division provides heavier weapons and the capability for more diversified fires than does the organic equipment of the Australian division.

Combined planning and mutual understanding will reconcile the significant differences in terminology, procedures, and methods used to control

major maneuver elements. Each of these differences must be considered before an operation involving a combined force of U. S. - Australian divisions can be adequately planned. The paramount requirement prior to operations in a combined force environment is the establishment of standard terms for use by all components of the combined force.

The U. S. infantry division and the Australian division were organized for different purposes. Consequently, there is a significant difference in the overall combat power and mobility of these two divisions. These differences are also effected by the characteristics of the area of operations in which they are employed. Therefore, a commander of a combined force of U. S. and Australian divisions must consider these differences in arriving at a decision as to how each division can best be employed.

The key to the successful formation of a combined force consisting of an Australian Army PENTROPIC division and a U. S. Army infantry division is recognizing that there are both significant differences and significant similarities between the two divisions. The combined force commander that recognizes these similarities and differences should have no insurmountable problems in organizing an effective U. S. - Australian combined force.

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