

- Major NR CHARLESWORTH
Royal Military College

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CONTENTS

Page

THE PENTROPIC DIVISION

Introduction	7
Infantry	10
Armour	14
Artillery	18
Engineers	22
Signals	26
Intelligence	29
Supply and Transport	31
Medical	33
Ordnance	36
Electrical and Mechanical Engineers	39
Provost	44
Pay	45
Postal	45
Aviation	46
Command and Control	48
Equipment	51
New Techniques	51
Non-Divisional Troops	52

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AUSTRALIAN ARMY JOURNAL

Editor:

COLONEL E. G. KEOGH, MBE, ED (RL)

Assistant Editor:

MAJOR W C. NEWMAN, ED.

Staff Artist:

MR. G. M. CAPPER

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FRONTISPIECE

In September 1943, after preliminary operations along the north-western New Guinea coast, the Commander-in-Chief of the South-West Pacific Area, General of the Army Douglas MacArthur, launched an offensive to open the Vitiaz Strait. 7 Australian Division air landed at Nadzab in the Markham Valley while 9 Australian made an amphibious landing in the Huon Gulf. Both divisions converged on and captured Lae. The Seventh then moved north-westward into the Ramu Valley while the Ninth moved around the coast to stage another amphibious assault against the Japanese at Finschhafen. In the latter operation *bitter fighting centred around the Sattelburg feature.*

The picture shows troops of 9 Division moving in behind Matilda tanks for the final assault on Sattelburg.



This issue of the Australian Army Journal is devoted to an explanation of the new PENTROPIC Division organization which has now been adopted in the Australian Army.

Formal training doctrine will be issued in due course. In the meantime the Journal is a convenient medium to disseminate information on the new organization quickly to a large number of people.

No organization is ever perfect, and the PENTROPIC Division is no exception. Doubtless there will be changes made as it is put to the test in exercises and eventually, perhaps, in battle. I am convinced, however, that it represents a very real step forward in the fighting efficiency of the Australian Army.

I commend this issue of the Journal to your serious study.

Lieutenant-General.
Chief of the General Staff.

THE PENTROPIC DIVISION

INTRODUCTION

1. Faced with the need to reduce the vulnerability of our field forces to nuclear attack, and to improve their capacity to meet the particular requirements of a war in South-East Asia, the Army has evolved a new divisional organization. It is a lean, powerful, versatile organization readily adaptable to any type of operation in which it is likely to be involved in South-East Asia.

2. The new organization is called the PENTROPIC Division. This name derives from its pentagonal or "five-sided" basic structure and the fact that it is specially designed for employment in tropical areas. In its overall size and basic Infantry organization it resembles the United States PENTOMIC Division, which has now been adopted as standard throughout the United States Army after several years of extensive study, trials and field manoeuvres.

3. The overall strength of the Pentropic division is 14,000, which is 2,000 below the existing tropical division. Yet despite this reduction it has more rifle sections, more tanks, more field guns, more medium mortars, a light aircraft unit and a vastly superior communications system.

4. Atomic warfare demands greater dispersion, greater mobility, better communications and control,

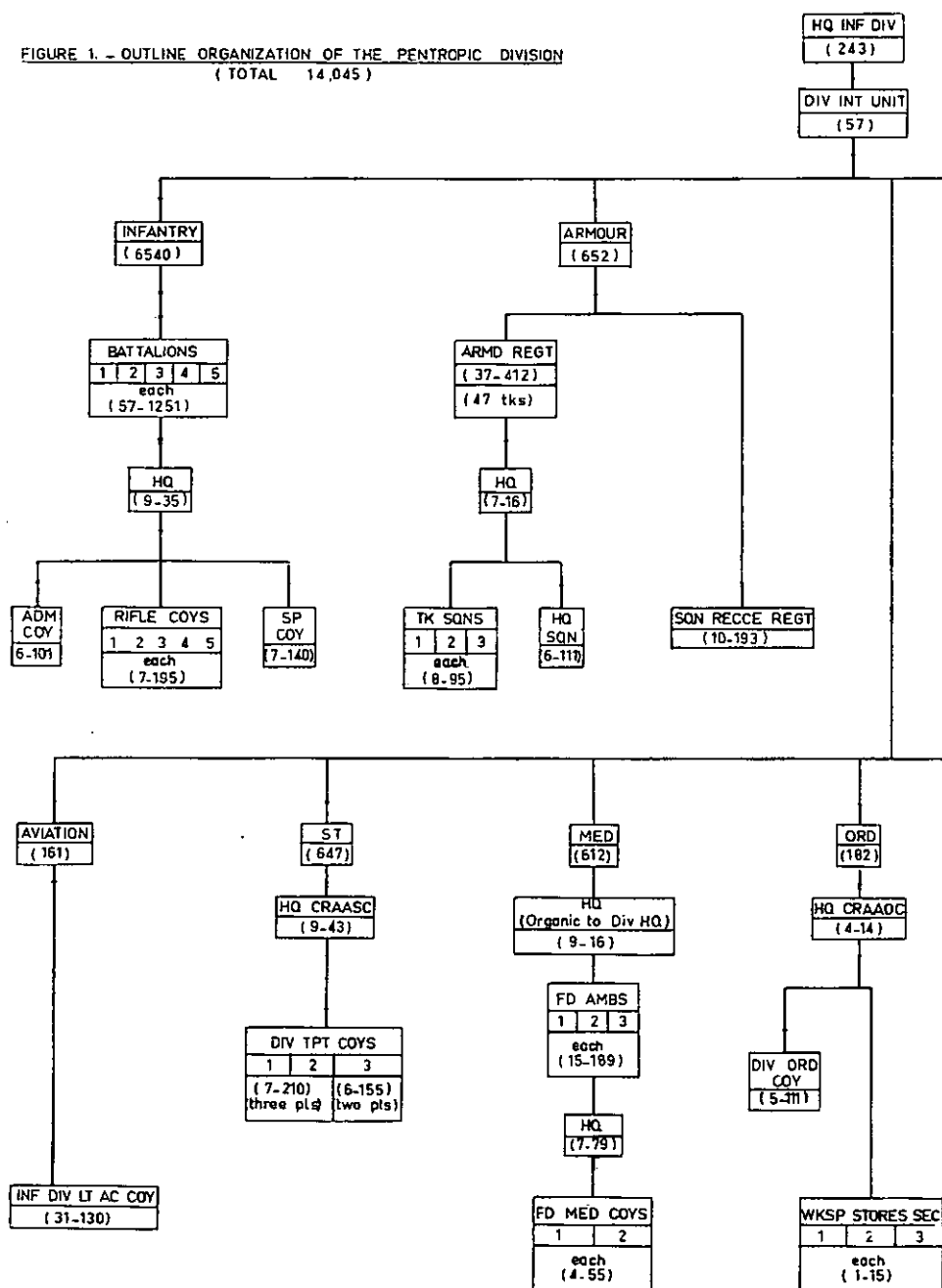
increased strength in units and sub-units, and greater reliance on small-unit leaders and individual fighting men. To a large extent the operational environment in which our field forces are likely to be employed, by its very nature, imposes similar demands. The Pentropic division is designed to meet these demands.

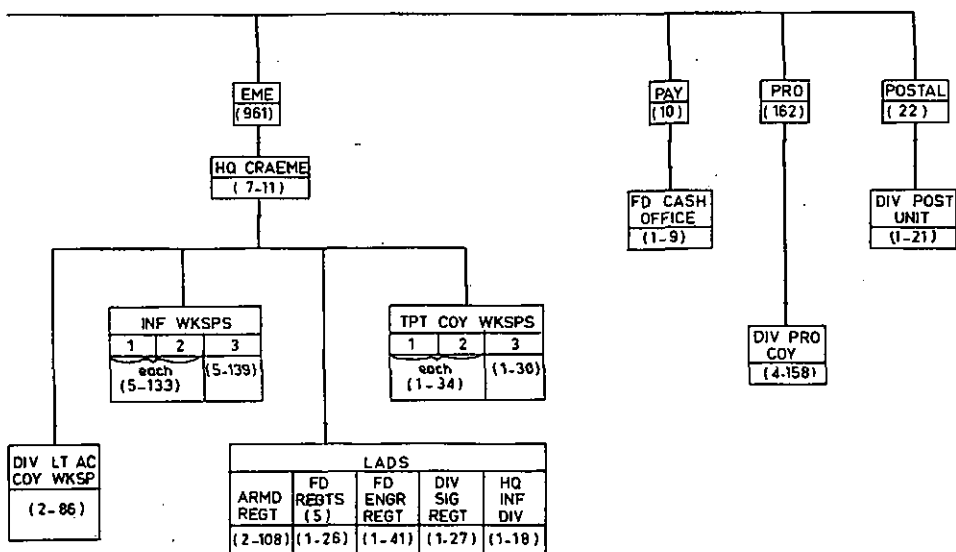
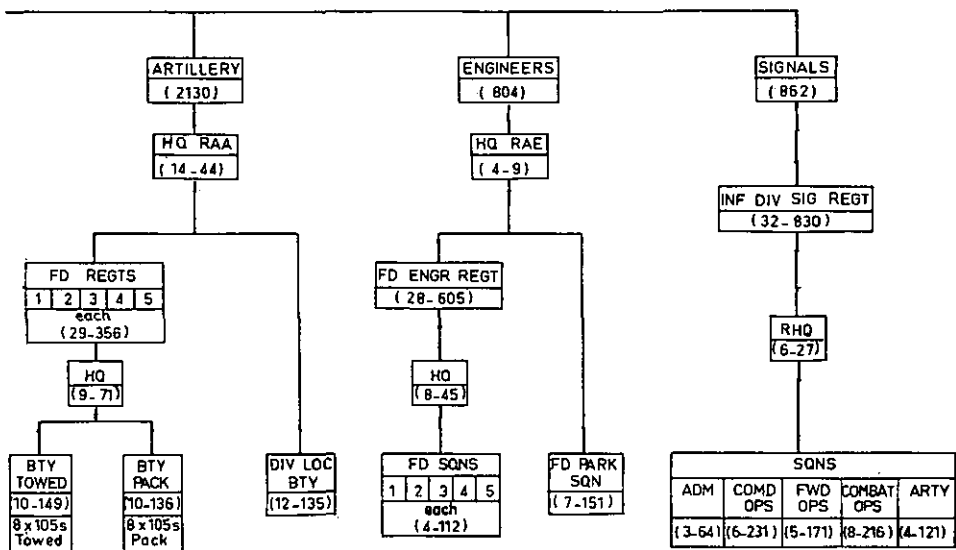
5. The division is built around five infantry units, each having a limited capacity for independent operations for short periods, and a high degree of air-transportability and general mobility. These basic Infantry units are still called Battalions. However, they are much larger and stronger than existing battalions, having half as many personnel again and twice the effective fire power.

6. New and improved signal communications have made possible an increased span of control of subordinate units in the new infantry division. The ability to control directly five major tactical units instead of the conventional three confers on the Divisional Commander much greater flexibility than he could exercise previously.

7. Combat support within the division is provided by an armoured regiment, a reconnaissance squadron, five field regiments, a field engineer regiment of five squadrons and

FIGURE 1. - OUTLINE ORGANIZATION OF THE PENTROPIC DIVISION
(TOTAL 14,045)



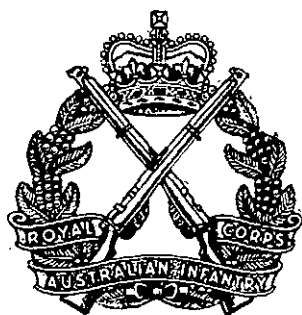


a divisional signal regiment. Logistic support is provided by Medical, Supply and Transport, Ordnance and RAEME units. A light aircraft company, with fixed and rotary wing aircraft, is included for purposes of liaison, reconnaissance, observation, limited casualty evacuation and similar tasks. Intelligence elements previously attached separately to divisional headquarters are now grouped into a small unit.

8. The outline organization of the Pentropic division is shown in Figure 1. More detailed organizations of individual units are included in the sections dealing with the appropriate arm or service. The precise figures shown may vary

slightly when unit establishments are prepared.

9. Certain combat units which must be available to the division are included in a Combat Support Group when the division is operating independently. This group includes additional armoured, artillery, engineer and signals units such as APC, Anti-Tank, Medium, LAA, Corps Engineer and Corps Signals regiments. When the division is operating as part of a larger force, these units will be incorporated into the normal Corps structure; however, they must always be available to the division to enable it to realize its maximum potential under appropriate conditions.



THE INFANTRY

10. The infantry of the Pentropic Division is organized into five battalions normally controlled directly by division headquarters.

11. It is a fair approximation to say that a pentropic battalion is equal to one and a half of the old battalions numerically and develops twice the fire power. Against the thirty-six assault sections of the old battalion, the new one has eighty. To gain flexibility, all vehicles are good cross-country performers of jeep size. With the exception of four heavy anti-tank guns, all loads are man portable.

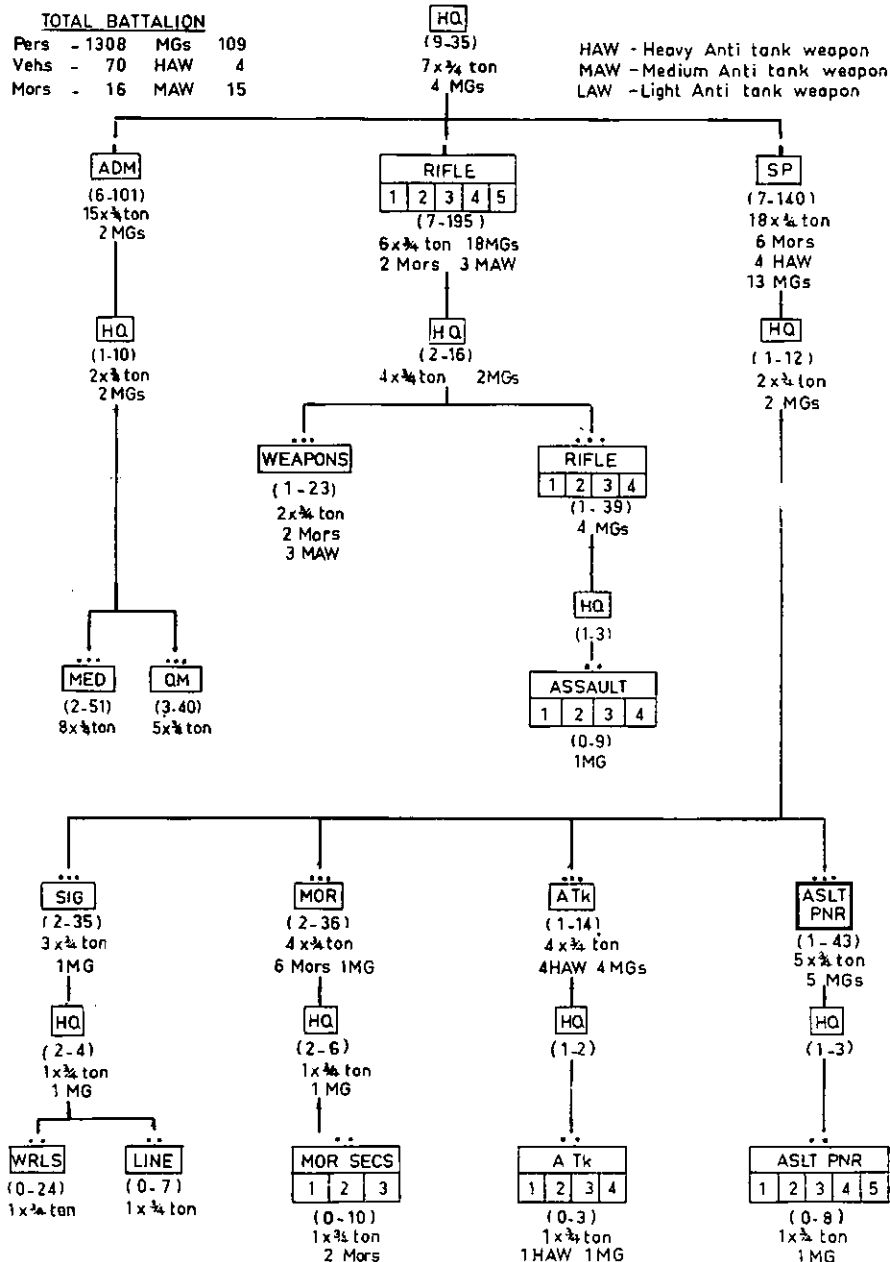
Tasks

12. The tasks of the battalion are to close with the enemy to kill or capture him, to repel attack and to seize and hold ground. These tasks are to be conducted in all weathers and seasons, by day or night and in any terrain. The battalion has a limited degree of independence and can operate dismounted or be carried by road, sea or air when provided with sufficient appropriate transport.

Organization

13. The organization of the battalion, of which there are five in

FIGURE 2. OUTLINE ORGANIZATION OF BATTALION

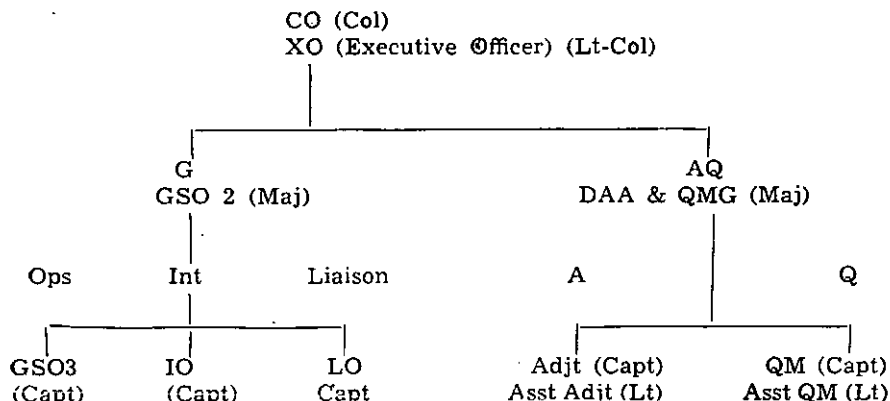


the division, is shown in Figure 2. Notes on this organization are given in paragraphs 14 to 29.

Headquarters

14. To enable the commanding officer effectively to control his

seven companies and the units of other arms and services invariably allotted to his support, the old battalion headquarters has been augmented by the addition of three staff officers and is organized thus:



15. In this organization, the LO understudies the IO, the IO understudies the GSO3, and this officer, in addition to manning the battalion rear link wireless set, assists and understudies the GSO2. On the other side of the house, the adjutant understudies the DAA and QMG.

Five Rifle Companies

16. This is the area in which the major fundamental reorganization is effected. Based on the premise that, at least in war, the chief stock-in-trade of a platoon commander is initiative and leadership and that he often will not have any great tactical skill or experience, his task has been made as simple as possible by removing all supporting weapons from his command and by adding an additional assault section to increase his flexibility and enable him more easily to gain depth. The assault sections remain unchanged, but are armed with FN rifles and 7.62 mm

general purpose machine guns, two of which are also carried on company headquarters.

Support Company

17. The major change in this sub-unit is that the machine gun platoon has been eliminated and an anti-tank platoon has been reintroduced. The new machine gun will be a general purpose weapon equally useful in the light or medium role. Thus, no special techniques are involved in its employment and medium machine gun tasks can be fired by the spare guns carried on rifle company headquarters fired from tripod mountings.

18. The pentropic division is not overburdened with armour, and battalions must be prepared to do more to protect themselves against enemy tanks than did the old battalions. The four heavy anti-tank guns of the anti-tank platoon (120 mm re-

coilless rifles) have a good performance at quite long range and should form a sound basis for the anti-tank defence of the battalion when supplemented by the medium anti-tank weapons of the rifle companies and the 324 light anti-tank weapons (70 mm rocket launchers) issued to assault sections throughout the battalion.

19. The assault pioneer platoon has five sections (one per rifle company) each equipped with a motor digger, a chain saw, explosive fox-hole diggers and the more usual digging tools and explosives. The single bulldozer and tipping truck have been eliminated.

20. The mortar platoon remains unchanged except that the 3 in. mortar is replaced by an 81 mm weapon.

21. The signal platoon functions as previously, but is reduced in strength from 55 to 37 all ranks.

Administrative Company

22. The main changes in this company are the allotment of six jeep-type ambulances and the inclusion

of a bearer officer and all the hygiene duty-men in the medical platoon, the elimination of large stores holdings in the quartermaster platoon and the provision of an assistant quartermaster, attached from the RAAOC. The increase in ambulances is to cope with the longer turn-round in casualty evacuation to be expected from the wide dispersion necessary under the threat of nuclear war.

23. The stores previously carried by the quartermaster platoon are available on 24 hours' notice in the ordnance field park and the need for a B echelon is eliminated.

Fire Power

24. As previously mentioned, the fire power of the battalion is approximately double that of the old battalion. This is achieved by the increase in assault sections from 36 to 80 and the increase in medium mortars from 6 to 16.

25. If you place much value on statistics, the fire power of the Pentropic battalion might be compared with that of the old battalion thus:

Unit and Weapons	Rounds per minute (Rapid fire)	
	Small arms	Mortar
<i>Old Battalion:</i>		
36 assault sections	22,812	
6 medium machine guns	1,500	
6 medium mortars		72
	24,312	72
<i>Pentropic Battalion:</i>		
80 assault sections	47,360	
16 medium mortars		192
	47,360	192

26. When the going precludes the use of vehicles, and mortars have to

be man-handled forward, the 93 mortar personnel of the battalion

can comfortably carry 6 mortars and sufficient ammunition for 3 minutes rapid fire.

Communications

27. The reduction in strength of the signal platoon is made possible by passing responsibility for the unit signal centre and for switchboard operation to the Signal Troop allotted to support the battalion and by passing responsibility for line maintenance parties to the companies, merely allotting each a single linesman to supervise the task.

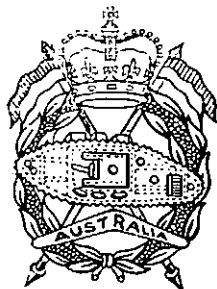
28. The communications provided by the platoon are:

- (a) A battalion command net using AN/PRC 10 sets and backed by

a small number of A510 high frequency sets for use on long-range patrols or when use of the very high frequency sets is impracticable.

- (b) A mortar fire control net throughout the battalion based on the AN/PRC9 set.
- (c) Company command nets based on the AN/PRC 26. set
- (d) Platoon command nets based on the one-way pocket radio set, AN/PRC 34.

29. Line is kept to a minimum, with each major sub-unit carrying its own telephone to be connected, as convenient, to the unit switchboard when operations become static.



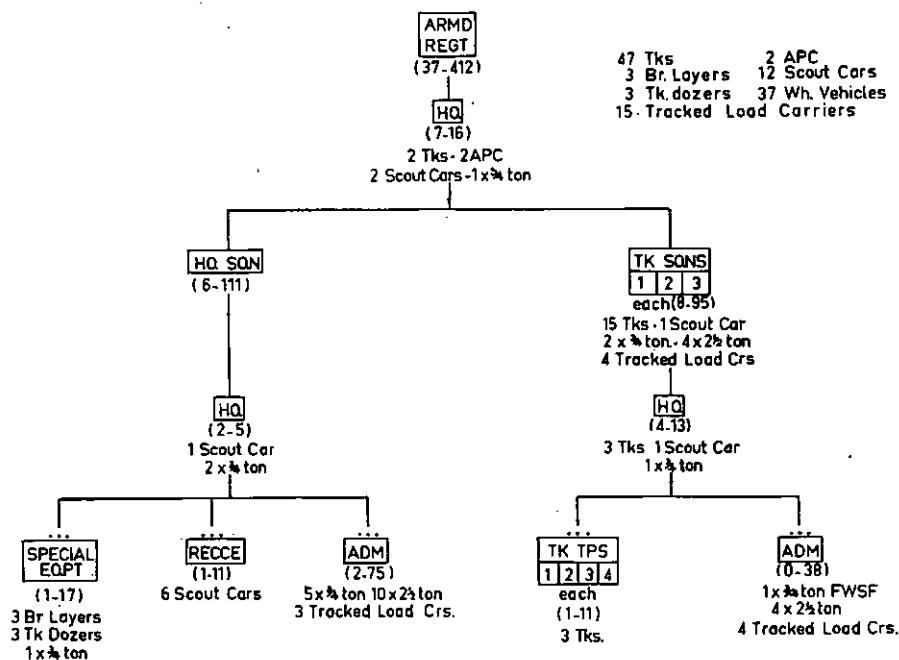
30. The RAAC units which are organic to the Pentropic Division and which are discussed in detail below are the Armoured Regiment and the Reconnaissance Squadron. These units, however, represent only portion of the RAAC effort required to enable the Pentropic Division to carry out the roles for which it was designed. No discussion of RAAC units would therefore be complete without brief mention of those additional units which form part of the Combat Support Group which backs the division, and which, no less than the RAAC units within the division, help this new organisation to operate efficiently. They are discussed

ARMOUR

briefly in para 42.

31. One further point which must be made clear is that the organizations adopted for both divisional and non-divisional units are the minimum compatible with the efficient operation of the division. For example, in deciding the organization for the armoured regiment it would have been both convenient and logical to follow the pentagonal structure and have a regiment with five tank squadrons. However, in choosing between what was desirable and what was essential, manpower, the cost of equipments and the maintenance effort involved were the limiting factors.

FIGURE 3. OUTLINE ORGANIZATION OF ARMoured REGIMENT.



Armoured Regiment Tasks

32. The tasks of the armoured regiment are:—

- (a) In jungle and close country the close support of the infantry.
- (b) In open country—
 - (i) To operate in the mobile role supported by other arms.
 - (ii) Close support of infantry.
 - (iii) Assistance in the anti-tank defence.
- (c) In nuclear operations tanks provide a degree of protection from enemy nuclear strikes and thus may ensure some forces readily available to counter enemy follow-up action. Furthermore, tanks provide a means of exploiting our nuclear fire.

Organization

33. The organization of the armoured regiment is shown in Figure 3.

34. The establishment of the new armoured regiment does not vary greatly from the Tropical Establishment. The most important change has been to restore to the unit the ability to operate in the mobile role supported by other arms. This was done by re-including tanks on the regimental headquarters and increasing to three the tanks on squadron headquarters, so raising the number of tanks in the regiment from 39 to 47. By enabling the squadron and regimental commanders to go wherever their troops can go and to take with them adequate communications for command

and administration, these additional tanks ensure that the mobility and flexibility so necessary for effective armoured action can be achieved.

35. The other important change has been the substitution of tracked load carriers for certain of the wheeled re-supply vehicles in the administrative troops of the tank squadrons and in the headquarter squadron. This will make re-supply more certain when the nature of the ground or obstacles makes the use of wheeled vehicles difficult or impossible.

36. Reference has been made earlier to the factors which resulted in the tank strength of the armoured regiment being reduced to the essential minimum. The acceptance of this minimum demands the most careful and co-ordinated allocation of armour to the many tasks the tanks will be called upon to carry out. The scarcity of tanks will tend to increase the pernicious habit of using them in smaller and smaller numbers. Such a practice must be resisted strongly, as it will only result in frittering away the available tanks.

Reconnaissance Squadron

37. It is some years now since the Australian division had its own organic reconnaissance element, but the roles demanded of the Pentomic Division make the inclusion of such an element essential. The unit provided is primarily a squadron from the present Armoured Car Regiment but with two important alterations.

38. In the operations envisaged in South-East Asia it would appear that once contact has been made the reconnaissance unit will be heavily involved with patrolling within the divisional sector and between the battle groups, escort duties, and in-

ternal security to combat infiltration and enemy inspired subversion. These tasks demand an increase in dismounted personnel or fire power or both in the reconnaissance squadron. This requirement has been met by including a squadron headquarters—two additional armoured personnel carriers each with 7 personnel and one 81 mm mortar.

39. The second major change has been the inclusion of a surveillance troop in the squadron. This has a ground photo section to assist in reconnaissance and a ground radar section which can be employed in either a surveillance or reconnaissance role, particularly during periods of poor visibility. This troop would normally work in conjunction with the airborne electronic surveillance and reconnaissance aids such as radar, television and infra-red, which, because they are mounted in aircraft, are located for convenience with the divisional light aviation company.

Tasks

40. The tasks of the reconnaissance squadron are:—

- (a) Medium and long range reconnaissance; this is the primary role.
- (b) Watching an exposed flank.
- (c) Internal security.
- (d) Escort duties.
- (e) Covering a defensive position or a withdrawal.
- (f) Taking up a line of observation, normally behind an obstacle.
- (g) Offensive action in the pursuit.
- (h) Independent raids.
- (i) Traffic control.
- (k) Anti-airborne operations or assisting our own airborne attacks.
- (l) Damage reporting after atomic attack.
- (m) Assisting with communications under difficult conditions.

Organization

41. The organization of the reconnaissance squadron is shown in Figure 4.

Combat Support Group Armour

42. The Combat Support Group units referred to above are:—

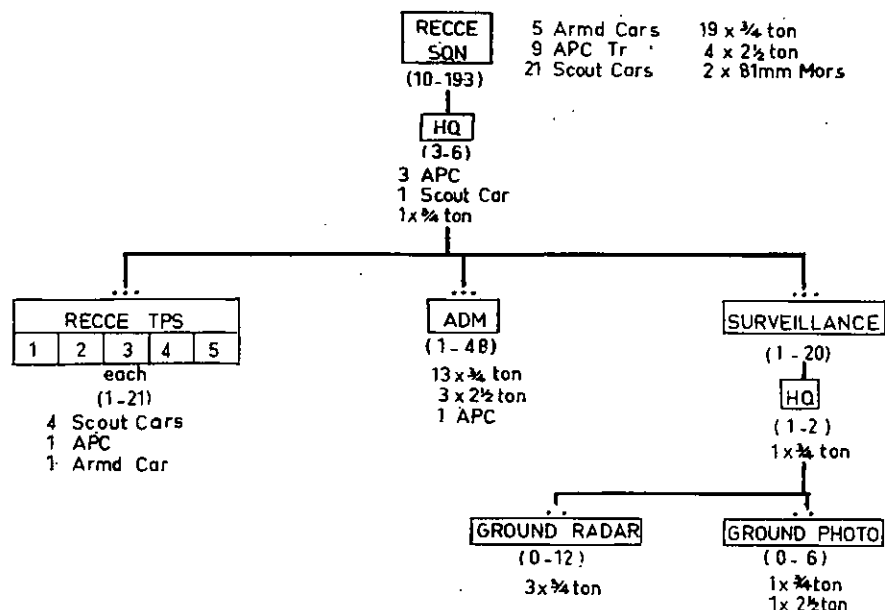
- (a) *Reconnaissance Regiment (less one squadron)*. In the operations envisaged in South-East Asia the reconnaissance squadron in the division could not perform more than the barest essential tasks and requires to be backed by the remainder of a regiment.
- (b) *Armoured Personnel Carrier Regiment*. With the capacity to transport 1100 personnel, this unit is designed to lift one battalion in its tactical sub-units.
- (c) *Anti-tank Squadron*. It is essential that the relatively few

tanks available are relieved of the anti-tank role as much as possible, so they may concentrate on other tasks. The inclusion of an anti-tank squadron makes this possible.

- (d) % ARG. This unit is needed to ensure that tanks and other "A" vehicles are brought to and maintained in a state of combat efficiency ready for delivery to units.

43. Although the Armoured changes may not seem revolutionary, they do ensure that the two divisional units can fill their new roles. It must be remembered, however, that the full armoured support available to this new division is only reflected when the armoured units in the Combat Support Group are also taken into account.

FIGURE 4. OUTLINE ORGANIZATION OF THE RECONNAISSANCE SQUADRON





ARTILLERY

44. The artillery support for the pentropic division is grouped into two parts:—

(a) *Divisional Artillery*

This artillery is organic to the division and includes only those elements essential to fulfil the basic tasks of close fire support and counter mortar. The following units are included:—

Headquarters Royal Australian Artillery Division.

Five field regiments.

One divisional locating battery.

The organization of the Divisional Artillery is shown in Figure 5.

(b) *Combat Support Group Artillery*

The following units are provided to give additional artillery support required by the division:—

One medium regiment.

One light anti-aircraft regiment.

One surface to surface guided weapon (LACROSSE) battery.

One surface to air guided weapon (HAWK) battery.

One combat support group locating battery.

These units will always be available to the division and may be employed in part or as

a whole depending on the operational requirements. The organization of the Combat Support Group Artillery is shown in Figure 6.

Divisional Artillery

45. The main tasks of the divisional artillery may be summarized as follows:—

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

46. Close fire support for the five infantry battalions is provided by five field regiments, each regiment having two x 8 gun batteries. In each regiment one battery is equipped with US 105 mm Hows M2A2 and one battery with Italian 105 mm Pack Hows.

The choice of weapons was governed by the following requirements:—

- Adequate range,
- High degree of cross country mobility,
- Airportable by helicopter,
- High angle capacity,
- Uniformity of shell.

To meet the two main requirements of range and portability an equal proportion of each type of equipment has been included in each regiment.

The proven principle of close and permanent affiliation between in-

fantry and artillery is still maintained.

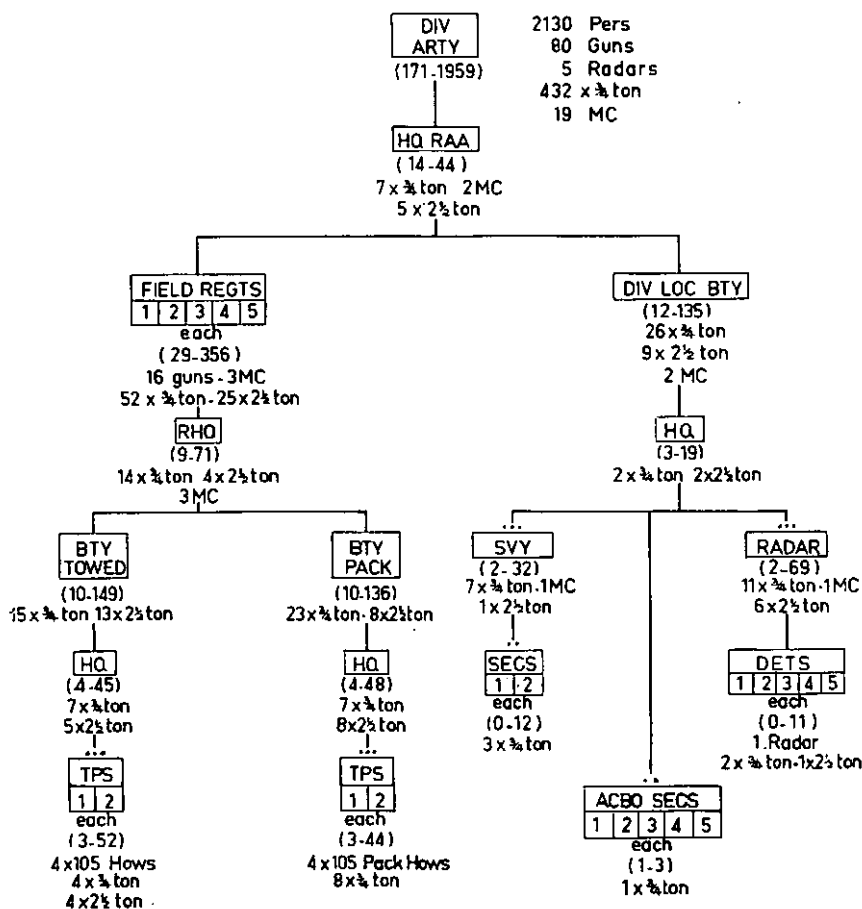
Counter Mortar

47. The requirement is to collect and collate information, to be able to locate enemy mortars and to be able to retaliate when:—

- Fighting as a division.
- Fighting as independent battle groups (e.g., insurgency operations).

Collation and retaliation are met by providing a Divisional Counter Bombardment Officer (DCBO) and staff on HQ RAA and an Assistant Counter Bombardment Officer (ACBO) with the necessary clerks and signallers at each battalion HQ. Location is met by providing one mortar locating radar per battalion. When fighting as a division the radars are concentrated and handled as a pool

FIG 5. OUTLINE ORGANIZATION OF THE DIVISIONAL ARTILLERY



of locating capability. Sound ranging methods for this role (i.e., counter mortar) have been abandoned, as they are too slow to instal, too short in range and too inflexible. With the exception of the DCBO and staff all counter mortar facilities are included in the Divisional Locating Battery.

Survey

48. The requirement is that domestic survey data must be available to each field regiment and radar set. This problem in South-East Asia will be acute, as it is expected that accurate survey data from maps and other records will be unavailable in many cases. A survey troop, sufficient to provide the require-

ment, is included in the Divisional Locating Battery.

Combat Support Group (CSG) Artillery

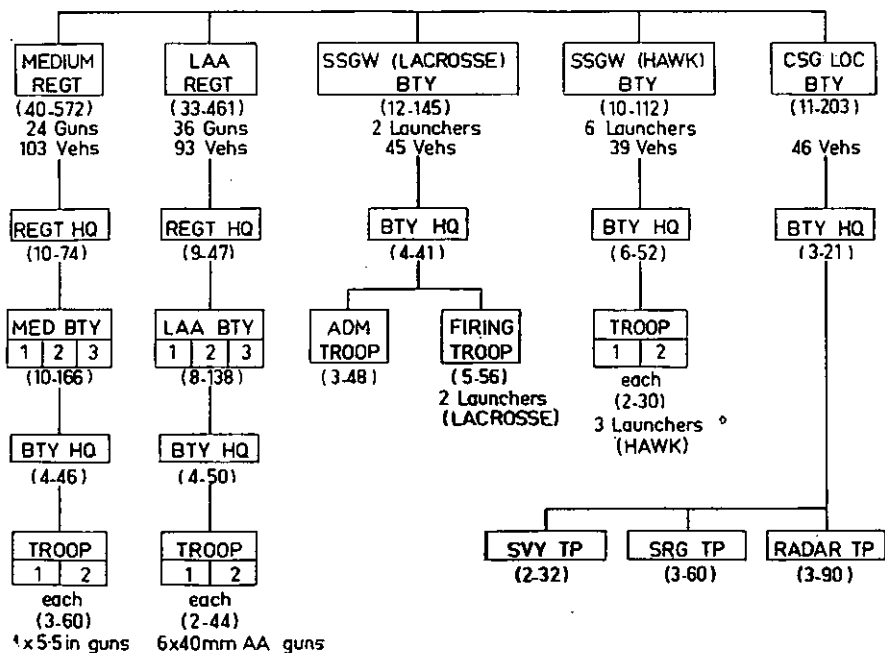
Medium Artillery

49. The range and weight of shell of the divisional artillery weapons are inadequate to neutralize tanks, hostile batteries and deep shelters. One medium regiment of 24 x 5.5 in. guns is included as a minimum to meet this requirement.

Air Defence Measures

50. A requirement exists for a measure to counter the fast high-flying jet (i.e., 600 + knots and up to 60,000 feet), of whom some warning of impending attack is available from radar, and the low-flying air-

FIGURE 6. COMBAT SUPPORT GROUP ARTILLERY (includes attached personnel)



craft, warning of whose attack will be negligible. The division is provided with the following to counter the threat:—

(a) **SAGW (HAWK) Battery**

The battery consists of 6 launchers having 18 "ready" missiles. It can engage low, medium and high level targets.

(b) **LAA Regiment**

One regiment of 36 x 40 mm Bristolized Bofors guns is provided to give a measure of protection to vulnerable points against the low-level unwarned of attacker.

Nuclear Potential

51. To give the division a nuclear capacity one SSGW (LACROSSE) Battery of two launchers is provided. This battery can provide nuclear and HE fire to give a longer range and heavier conventional support to the division. This battery therefore fulfils a dual requirement.

Specialist Requirements

52. For domestic artillery use it is necessary to provide survey, gun (as distinct from mortar) locating devices and blind firing facilities. These are all included in the CSG Locating Battery. Survey data is required for guns, SSGW, radar and sound ranging devices of the CSG artillery. A survey troop, similar to the survey troop in the Div Loc Bty, is provided to give these facilities. Accurate locating of hostile guns can be obtained from sound ranging devices. A long base (of about 10,000 yds) will give the required accuracy to a range of 25,000 yards. This is provided in the Sound Ranging troop. A radar troop of

four radars is provided to enable observation of fire where normal visual means are inadequate. This is particularly necessary in view of the probable gaps which will exist between battle groups. These radars are also capable of locating mortars and can assist the radars in the Div Loc Bty.

Major Changes from Previous Artillery Organization

53. The major changes are as follows:—

- (a) The number of field regiments in the division has been **INCREASED** from three to five.
- (b) The number of guns in the field regiment has been **REDUCED** from 24 to 16.
- (c) The type of gun in the field regiment has been changed from 25 pr to 105 mm How M2A2 and 105 mm Pack How Italian (8 of each).
- (d) The LAA regiment organization is unchanged, but is excluded from the division and included in the Combat Support Group.
- (e) HAA regiments (24 x 3.7 in AA guns) previously Army troops, have been replaced by SAGW (HAWK) batteries (6 launchers) and included in the Combat Support Group.
- (f) A nuclear potential (two LACROSSE launchers) has been included in the Combat Support Group.
- (g) Sound ranging for mortar location has been excluded from the divisional artillery, but is part of the Combat Support Group for gun location.



ENGINEERS

54. The primary function of RAE in the Pentropic Division is to facilitate the tactical mobility of fighting units and to deny to the enemy such mobility. This will involve, in South-East Asia, the overcoming of both artificial and natural obstacles and the rapid clearance of vegetation.

55. The second function of RAE is to facilitate the logistic support of such units by road and air. The tasks associated with this function will vary from the roughly cleared jeep track leading to forward infantry companies, light airfields, helicopter pads and supply dropping areas, to a two-way main supply route capable of sustained supply traffic and transport airfields.

56. The terrain of South-East Asia is characterized by poor road communications and vegetation varying from open savannah to rain forest. The task of RAE under these conditions is comparable with World War II, and is further complicated by the need for dispersal and concealment and personnel protection necessary because of the advent of nuclear warfare.

57. As it is clearly impracticable to increase materially the proportion of engineers in the division, the reorganization problem has been tackled on the basis of replacing

men by machines wherever possible.

58. The basic engineer combat unit has been scaled to what is considered necessary to support a battle group. The battle group may well have to operate independently, therefore the supporting engineer unit has to be relatively self contained. For this reason the field squadron has been retained but scaled down from nine to six sections and organized into two troops each of three sections.

59. Since infantry have adopted a pentagonal type structure of five battalions it is considered necessary for engineer support to be organized similarly to retain combat affiliation between units. Thus there are five field squadrons in the division. Centralized engineer control is essential for maximum use of the available engineer effort, so these field squadrons have been grouped under a regimental HQ and form a field engineer regiment.

60. The field squadron structure was arrived at after a consideration of likely tasks in the battle group area. The machines necessary to undertake these tasks were determined and then the man-power necessary to support the machines.

61. By restricting the tasks of this field engineer regiment to those more directly related to battle, i.e., tactical support, and by introducing

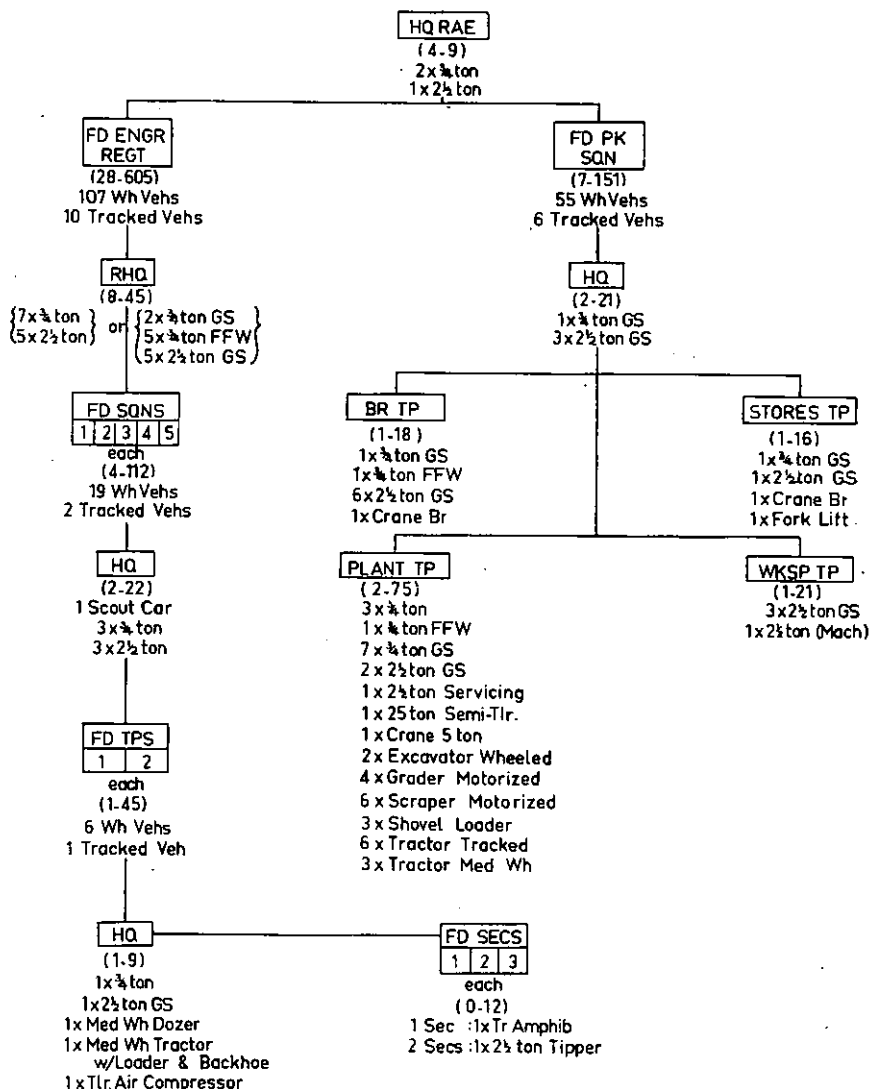
suitable machines within the field squadron, a 20% reduction in manpower has been achieved. Other tasks relating to the support of the division, including its logistic support, may be the responsibility of a

Corps Engineer Regiment in the Combat Support Group.

Field Squadron

62. This unit, of strength 4 and 112, consists of a HQ and two troops each of three sections, each of 12

FIGURE 7. ORGANIZATION OF DIVISIONAL ENGINEER UNITS



men. This gives a total of six sections each capable of undertaking engineer combat tasks for the battle group. Within the troop the equipment available to increase the output of the section is:—

- (a) A wheeled dozer (or tracked for rain forest).
- (b) A wheeled tractor with loader and rear mounted back hoe. Other attachments planned are a winch, crane and fork lift, carried in a tipping trailer.
- (c) A trailer type air compressor of the rotary vane type capable of operating two jack-hammers and other tools.
- (d) A tracked amphibious reconnaissance vehicle when available and two tippers, or three tippers for the time being.

63. This equipment is adequate for most tasks in open savannah in relatively dry weather. In the wet season its output will be considerably reduced.

64. In close jungle all sections engaged on route and track clearance will require supplementary plant from the plant troop of the field park squadron.

Field Park Squadron

65. This unit, of strength 7 and 151, still retains its basic functions and comprises the following:—

- (a) *The Stores Troop* is responsible for receipt, handling, holding, maintenance and issue of engineer stores for the division. It has no transport to carry or deliver such stores. It holds the lighting sets for divisional HQ.
- (b) *The Bridging Troop* maintains and carries the following equipment:—
 - (i) One bridging crane,

- (ii) Two infantry support rafts (class 2),
- (iii) Three 38 feet span fixed bridges (class 9),
- (iv) Eight assault boats.

This equipment is for emergency crossings of a minor nature, and construction is by infantry assault pioneers or field squadrons. Deliberate crossings must be pre-planned and the required stocking of bridging or rafting equipment positioned in rear of the division.

- (c) In the *Workshop Troop* a potential has been provided for the prefabrication of defence stores, revetting, signs, etc, and for production of sawn timber for bridging purposes.
- (d) The *Plant Troop* is the basic earth-moving unit of the division to supplement the field squadron potential for operations in close country and for road and track construction under all conditions.

66. The Plant Troop has been designed as a working unit which can:

- (a) Operate as a troop with two to three field squadrons to construct up to one mile of two-way supply road a day with associated equipment bridges in open country and with local surfacing material.
- (b) By corresponding reduction of this output it can undertake, in addition, the construction of a medium transport airfield, under suitable conditions, in up to 30 days.
- (c) In close jungle it can detach up to three plant sections each comprising two dozers, one loader, one grader, to provide additional capacity for three field squadrons to undertake, in addition

to their normal battle group tasks, the construction of access tracks in close jungle. Sufficient capacity is retained in the plant troop to continue road construction at a minimum rate.

67. The plant troop is self-contained for operation, servicing and unit and field repairs to "C" vehicles.

Corps Engineer Support to the Division

68. Corps engineer resources have been scaled to provide:—

- (a) In open savannah the development of a main supply route (MSR) and medium transport airfield construction forward of refilling points; and
- (b) In close jungle, the additional resources of personnel and equipment needed for combat support.

Corps Engineer Regiment

69. The organization of this unit is identical with and in future will be called a field engineer regiment. It was found necessary for corps field squadrons to replace divisional field squadrons in World War II, and similar conditions can be anticipated in the future.

Plant Squadron

70. Two plant troops and a plant park troop have been provided to support the activities of the division and corps engineer regiments. Under open savannah conditions, up to six squadrons can be supported on main supply route (MSR) construction and development. Under close jungle conditions the three plant troops available to the division and corps

engineer regiments will enable them to be fully supported under the most adverse conditions. A plant park element is provided for the provision of those items of plant which are essential but have only occasional use in the area, such as earth compactors for airfield construction.

Corps Field Park Squadron

71. The need for this unit will depend on the amount of engineer stores and bridging held near the Re-filling Point and the distance and state of communications forward from the FMA.

72. If conditions demand it, a corps field park squadron scaled down to store holding, minor workshop repairs and prefabrication, would be provided. The strength of this unit is 5 officers and 95 other ranks.

73. Where the L of C is short this unit could be eliminated, and the store-holding function behind the division would be in the FMA.

Command and Control Within the Division

74. It is inevitable that certain conditions such as more difficult terrain and larger river crossings will necessitate part, or all, of the corps engineer regiment supporting the division engineer regiment. To meet this need, command of the two regiments is exercised by the CRE at HQ RAE adjacent to divisional HQ. The field engineer regiment HQ could, under certain conditions, operate as the HQ of detached RAE units forming part of an independent task force. It could also provide an alternative HQ to command the divisional engineers in emergency.



SIGNALS

75. In normal warfare, communications are important; in the tropics, with a nuclear threat, they are vital and paramount.

76. To benefit from the latest techniques which have been developed within the communication fields, and to provide the requirements for inter-communication within the Pentropic Division, the Signal Regiment has been completely re-organized.

77. The Signal Regiment now incorporates a modified Area Radio Relay System with a line back-up, which supplements the increased number of tactical and logistic radio nets.

78. The following signal policy changes have also been implemented as part of the reorganization of the Signal Regiment:—

- (a) Within Field Regiments, only the wireless rear links and battery charging are the responsibility of R Aust Sigs.
- (b) Unit long range radio links such as the Divisional Counter Bombardment and Engineer Field Squadron nets, will be operated by R Aust Sigs.
- (c) RAASC and RAEME are now responsible for providing their own internal communications.

Organization

79. The organization of the Pen-

tropic Division Signal Regiment, shown in Figure 8, has been designed to provide the following communication facilities:—

(a) Wireless

Tactical and Logistic Radio Nets, as set out hereunder, have been provided and form the prime and initial means of communications:—

(i) Command Net (Voice)—(VHF)

This Net enables the GOC to maintain personal command and control of all elements of the division.

(ii) Command Net (Telegraph)—(HF)

This Net is designed to handle all formal message traffic between Main Divisional Headquarters and all elements of the division. This system introduces Machine Telegraphy down to headquarters of battalions, with Morse Code as an optional facility for use in adverse conditions.

(iii) Administrative Command Net (Voice)—(HF)

This Net is provided for the handling of all Logistic traffic between formations/units and Rear Division Headquarters.

(iv) *G1/Intelligence Net*
(Voice)—(HF)

This Net is an alternative to the Command Net (Voice), as well as being required for the handling of operational traffic and for the passage of intelligence information. In addition, this Net will be used for the handling of the various types of information provided by electronic devices used in Battlefield Surveillance, when they are included in the Pen-tropic Division.

(v) *Divisional Air Request Net*
(Voice)—(HF)

This Net provides facilities for the passage of requests for air support from both Divisional and Support Aircraft.

(vi) *Divisional Warning Broadcast* (Voice)—(HF)

In order to provide early warning of either friendly nuclear explosions or the result of enemy action, details will be broadcast from Main Divisional Headquarters. All units are provided with special receivers "locked" to the broadcast frequencies.

(vii) *CRA Command Net*
(Voice)—(VHF)

This Net provides the CRA with facilities for the personal command and control of Artillery units under Divisional command.

(viii) *CRA Administrative Net*
(Voice)—(HF)

This Net handles all the logistic traffic between HQ

RAA and all Artillery units. It also provides an alternative net to the CRA Command Net when circumstances preclude the use of VHF.

(ix) *CB Net* (Voice)—(VHF)

The long distance circuits between the DCBO staff and the Radar Detachments and ACBOs located at Battle Groups.

(x) *CRE Command Net* (Voice)—(VHF)

This Net provides the CRE with facilities for the personal command and control of all Engineer units under command of the Division.

(xi) *Field Engineer Regiment Net* (Voice)—(VHF)

The long distance circuits between the Headquarters of the Field Engineer Regiment and Field Squadrons, dispersed over the Divisional area.

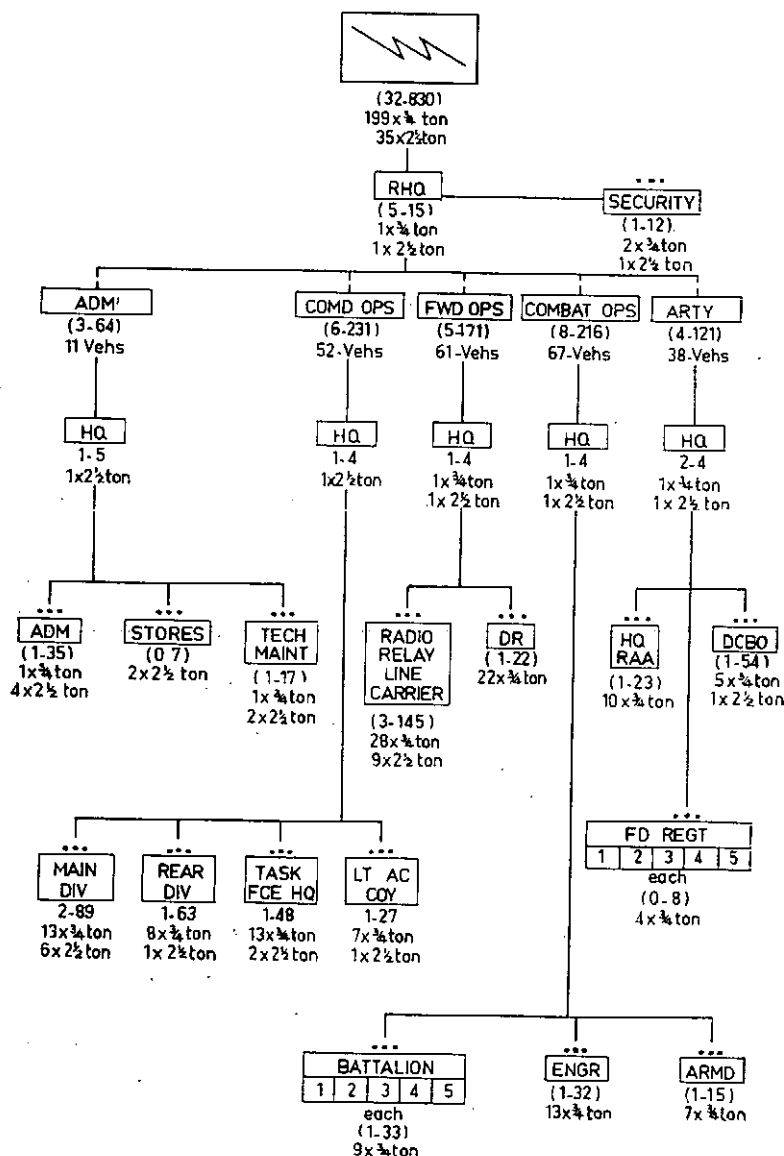
(b) *Radio Relay/Line System*

A modified area system employing a flexible combination of Radio Relay and line, designed to provide the main framework of communications when circumstances permit the installation of these facilities. They will provide the bulk of "Common User" communications, whilst line also provides a counter to an Electronic Warfare threat.

(c) *Message Carrying Agency*

Despatch Riders will form the basic method of the Signal Despatch Service, whilst aircraft will be used as an alternative means when terrain and dis-

FIGURE 8. OUTLINE ORGANIZATION OF DIVISIONAL SIGNAL REGIMENT.



tance preclude the use of vehicles.

As an alternative, facsimile equipment, for use over either radio or line, will be introduced when suitable equipment becomes available.

80. The Pentropic Divisional Sig-

nal Regiment, provided with the new range of communication equipment now being introduced, will be capable of serving the Pentropic Division and its Combat Support Group, including provision of communications on a reduced scale for a Task Force Headquarters.

INTELLIGENCE

81. The introduction of the Divisional Intelligence Unit is an attempt to make the Pentropic Division more or less self-contained in regard to staff required for the processing of battle intelligence. It will also allow a more centralized control of intelligence activities, for instead of having a number of small units organic, or attached to, the division, there is one unit carrying out the functions previously the responsibility of the field security section, the army photo interpretation section and the field interrogation teams.

82. In line with the streamlining of the division, part of the administrative element of each of these intelligence units, particularly transport, has been pooled to form a small Administrative Section.

83. The Divisional Intelligence Unit is commanded by the Intelligence officer from G Int in divisional headquarters, who will now be a major. The direction of the intelligence activities of the unit will rest with the GSO2 (Int), but the IO, being on the Div HQ Staff, as well as commanding the unit, will

be able to assist greatly in the co-ordination of intelligence activities and in the anticipation of intelligence tasks required.

84. The GSO2 (Int) will also direct the intelligence activities of the Reconnaissance and Surveillance Platoon of the Div Lt AC Coy, and will co-ordinate requests to the Lt AC Coy for the use of aircraft on battlefield surveillance tasks. The actual organization and equipment of the Reconnaissance and Surveillance Platoon is still under consideration.

85. The increased importance of battlefield surveillance in the nuclear war and the additional intelligence staff requirements consequent upon this is the reason for the inclusion of a small Battle Intelligence Section in the Div Int Unit. The personnel of this section will be the specialists on enemy ORBAT intelligence.

86. The Air Photo Section will include a Mobile Photographic Enlargement Section, which will be available to process and print photos taken from the aircraft of the Div Lt AC Coy. when on reconnaissance

or battlefield surveillance missions.

87. The Linguist Section is designed to provide a limited number of interrogators for "Spot" interrogations down to battle group headquarters; for duties in the interrogation of prisoners and refugees; and for limited assistance to the Security Section on counter-intelligence activities.

Div. Intelligence Unit

88. *Task and Capabilities.* The divisional intelligence unit replaces the former G2 (Int), APIS, FS Sec and FIT. Its tasks and capabilities are:—

- (a) Direction of intelligence and counter intelligence activities in the division; and co-ordination and processing of information received from all sources.

- (b) Extraction, collation and dissemination of intelligence from air photographs; and distribution of air photographs in bulk.

- (c) Responsibility for operational counter-intelligence activities within the division and for advice; and

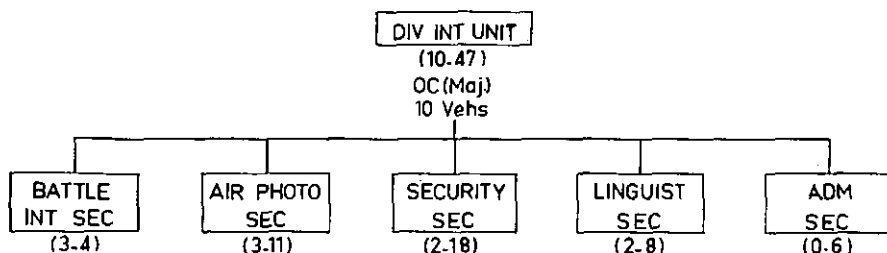
- (d) Investigation of security dangers, breaches, etc, and liaison with civil authorities.

- (e) Immediate interrogation of PW at battle group level and translation of captured documents of immediate interest.

- (f) Provision of assistance to the division in contact with local inhabitants, including refugees.

89. *Organization.* The outline organization of the divisional intelligence unit is shown in Figure 9.

FIGURE 9. OUTLINE ORGANIZATION OF THE DIVISIONAL INTELLIGENCE UNIT.





RAASC ORGANIZATION

90. The functions of the Supplies and Transport Service are not changed in the Pentropic Division, and therefore the basic organization of the Divisional Column RAASC has not been altered significantly. However, as the Column must be in balance with the divisional organization as a whole and designed for operation in tropical theatres of war, adjustments in its establishment have been necessary.

91. Perhaps the main concern in deciding the number of task vehicles to be operated by the Divisional Column was the marked limitation on the number of vehicles which will be able to deploy in relatively undeveloped tropical areas. On one hand the task vehicle requirement to carry the divisional second line holdings, maintain daily resupply, and meet the various other demands for transport within the divisional area can be calculated without difficulty, but on the other it is simple wisdom that a very minimum of vehicles to perform essential tasks should be taken into a tropical theatre.

92. It will be remembered that the main duties of a Divisional Column RAASC are:—

- (a) Collection from the rear of ammunition, POL and supplies, and their delivery to some convenient point in the forward area;
- (b) The holding and carriage of the

division's second line reserves, and

- (c) Meeting the various other requirements for second line transport work.

93. The policy has normally been for the divisional second line reserves to be kept "on wheels." The advantage of this in terms of mobility of the formation and economy of labour in the ST Service is well known. However, this lift alone entails the constant commitment of about 165 x 2½ ton trucks, or, working on a high availability figure of 80%, a requirement of 200 task vehicles in the Divisional Column plus a 10% reserve. This is judged to be too many, and as our previous experience in the South-West Pacific Area showed that second line reserves, even though reduced for jungle operations, could not be kept on wheels, the capacity to do this has not been provided in the Divisional Column.

94. So that the Pentropic Division may develop full offensive power when the terrain permits mobile operation the capacity to lift full second line reserves has been provided by two platoons (40 task vehicles) of supplementary second line transport held in the Combat Support Group.

95. The Divisional Column RAASC consists of a HQ CRASC, three MT companies in which are distributed

the eight transport platoons (each 20 task vehicles) and three composite platoons, and three transport company workshops RAEME.

96. It is designed to operate continuously at full capacity as a pool of transport under divisional control, and the 160 task vehicles are to carry the divisional daily maintenance in active operations and undertake limited additional running. Consideration was given to a five-part organization for the Column because of its obvious advantages in allocation of ST sub-units to task forces and normal affiliations with battalions, but the manpower and equipment overheads, when this is related to 160 task vehicles, have been considered too high.

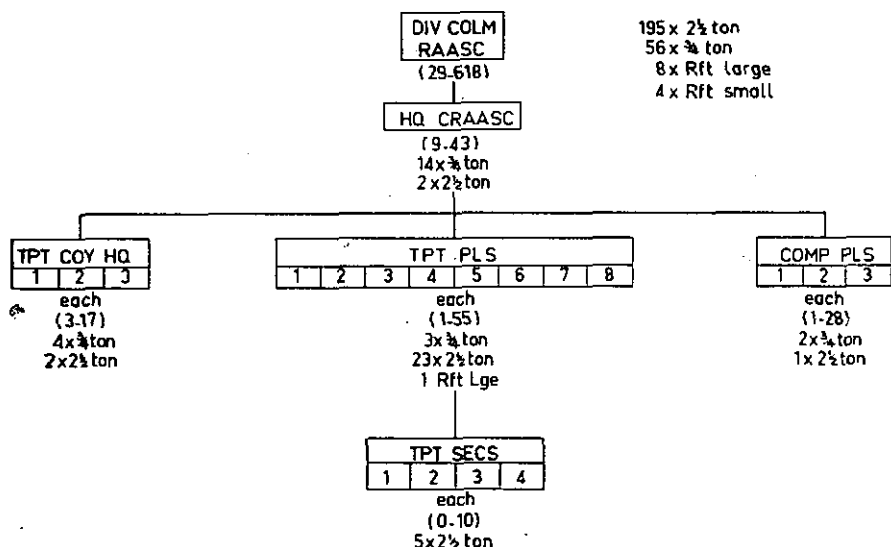
97. The Divisional Column is to be equipped with 2½-ton GS trucks, but will be capable of operating on a light vehicle basis when required.

Use of trailers is not favoured in tropical terrain, but consideration is being given to introduction of rolling fluid transporters (which can be manhandled) for carriage of bulk liquid fuels.

98. Other changes worth noting are:—

- (a) Streamlining of Company and Platoon Headquarters.
- (b) Introduction of two drivers per task vehicle (one per reserve vehicle) in place of one driver per vehicle with relief driver increments.
- (c) Reduction of transport platoons to 20 task vehicles organized in four sections of 5 vehicles.
- (d) Division of composite platoons into two identical sections, with a small headquarters. The role of the composite platoon has been modified to permit the holding of small quantities of

FIGURE 10. OUTLINE ORGANIZATION OF A DIVISIONAL COLUMN RAASC.



supplies, POL and ammunition on the ground in the divisional area.

- (e) Deletion of motor cycles, with substitution for them, where necessary, of a light GS vehicle.
- (f) Introduction of wireless communications. These will consist of a rear link to the divisional administrative net and two sets for use with delivery points in the forward area, particularly in dumping programmes (the three are manned by R Aust Sigs), a unit net, and three company nets to be operated by Divisional Column personnel.

Div. Column RAASC

99. Task.

- (a) The collection from the rear of ammunition, POL and supplies

and delivery to units at some convenient point.

- (b) Holding and carriage of the division's second line reserves.
- (c) Meeting various requirements of the division for second line transport work.

100. The column is a pool of transport under divisional control and is expected to work continuously to full capacity.

101. Composition.

The column consists of:—

HQ CRAASC

Three company headquarters

Eight transport platoons (each of 20 vehicles)

Three composite platoons

Total of 160 task vehicles (2½-ton).

102. Organization.

The outline organization is shown in Figure 10.



RAAMC ORGANIZATION

103. In comparison with the medical organization of the Tropical Infantry Division the major changes in the PENTROPIC Division are as follows:—

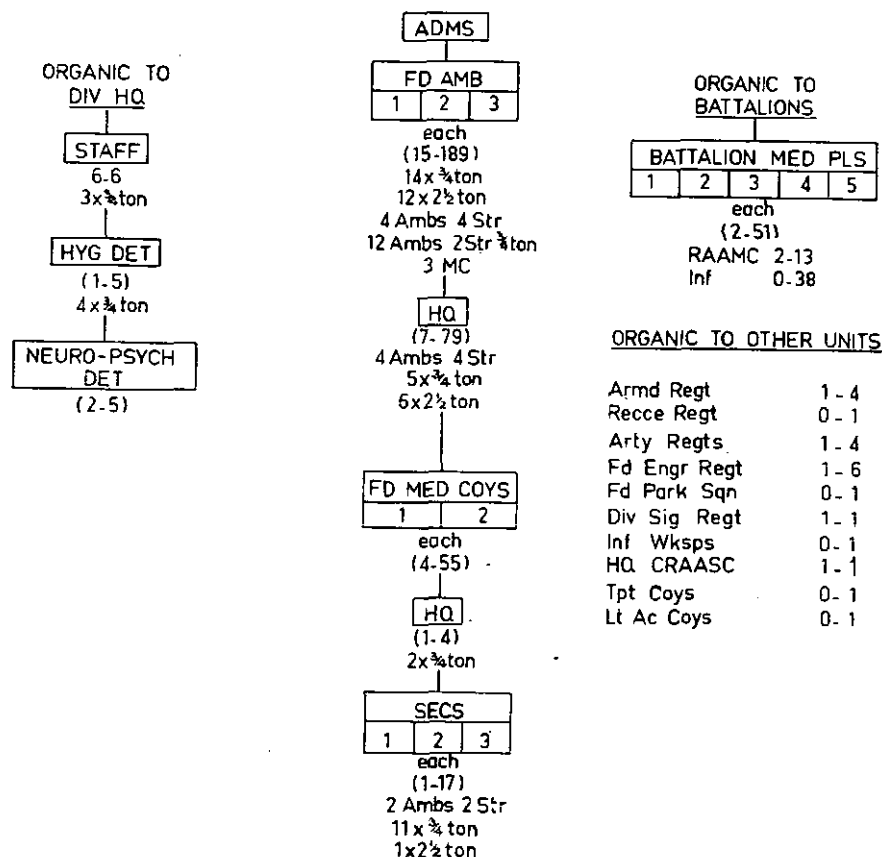
(a) Battalion Medical Platoon

- (i) The treatment potential has been increased by the addition of extra nursing orderlies.
- (ii) The collection and transportation potential has also been increased by the addition of an extra 5 casualty carrying vehicles.

- (iii) A Bearer Officer (RAAMC) has been added to this Platoon. His duties will include organising and supervising the collection and transportation of casualties from companies and assisting the RMO at the Battalion Aid Station.

- (iv) The rank of the RMO has been upgraded from Captain to Major. This is necessary in view of the larger number of troops and the necessity for a

FIG 11. OUTLINE MEDICAL ORGANIZATION



higher standard of professional and military skill.

(b) Divisional Medical Units

It was decided to delete the Field Dressing Station from the division and retain Field Ambulances, suitably reorganized to suit the PENTROPIC concept, as the major medical unit.

Field Ambulance

104. Details of the allotment, or-

ganization and role of the Field Ambulance are as follows:—

Allotment

Three per division, as divisional troops. The outline medical organization is shown in Fig. 11.

Organization

All field ambulances are standard and are similar in personnel, vehicles and equipment.

105. A Field Ambulance consists of a headquarters and two field

medical companies. Each field medical company consists of a company headquarters and three equal sections.

106. The field ambulance headquarters administers the unit, provides additional personnel to companies where and when required, and holds the bulk of the unit equipment and all the casualty carrying vehicles.

107. Each company is organized to perform many tasks, including—

- (a) Establishing an Advanced Dressing Station.
- (b) Collect and transport casualties from Battalion Aid Posts and Unit RAPs.
- (c) Holding minor sick and wounded for short periods.
- (d) Providing sustaining treatment for periods of up to 8 to 10 days for casualties occurring as a result of a nuclear strike, or in the event of a Battalion being isolated.
- (e) Providing medical support for Battle Groups by—
 - (i) Direct support, i.e., augmenting the Battalion Aid Post.
 - (ii) Establishing casualty collecting posts in the chain of evacuation back to the ADS.
 - (iii) Establishing ambulance car posts for aid when necessary.

108. Role.

- (a) The primary role is the rapid collection of sick and wounded, the rendering of first aid to casualties, their preparation for further disposal, and the completion of necessary documentation.

- (b) It can maintain the strength of the division by holding minor sick and wounded and mild exhaustion cases, in order to prevent any unnecessary evacuation of casualties to medical units in the rear.

109. The field ambulance is a mobile unit, and is not equipped to provide other than the simplest accommodation with essential equipment.

Divisional Headquarters

110.

(a) ADMS Staff—

The following officers have been added to the ADMS staff:—

(i) Aviation Medical Officer (Major):—

A specialist in Aviation Medicine, and as such will perform the following duties:—

- (a) Advise ADMS on all Aviation medical matters.
- (b) Act as air regulating and co-ordinating medical officer.
- (c) Perform the duties of RMO Divisional Aviation Company.
- (ii) Liaison Officers (Captains) —2

These officers are essential, as wireless communication is not provided as a direct net between ADMS and the medical units of the division.

(b) Medical Detachments—

The following detachments have been added, and are attached to Div HQ under the control of the ADMS:—

(i) *Hygiene Detachment*—This detachment consists of 1 officer and 8 other ranks. It is technically self contained with chemicals and insecticides, and is capable of immediately dealing with emergencies such as outbreaks of insect and water borne diseases. It can carry out specialist hygiene tasks in addition to its normal advisory and educational role. It is air transportable.

(ii) *Neuro-Psychiatric Detachment*—This detachment consists of 2 officers and 5 other ranks. Of the officers, one is a Psychiatrist who is the OC, and the other a Clinical Psychologist. The Psychiatrist advises the ADMS on all problems of mental health. He visits RMOs regularly

to advise them on mental health problems within the unit. This detachment will provide the specialist staff to assist the particular ADS which is admitting and treating exhaustion cases.

111. These specialists and detachments will permit greater flexibility within the divisional medical services and save an unnecessary wastage of manpower.

Command and Control

112. The ADMS administers the medical services of the division and commands the medical units and detachments.

113. As the allotment of field ambulances to the PENTROPIC Division is insufficient to permit one per battalion, the particular task allotted by the ADMS is based on the medical requirements of the whole division.



RAAOC ORGANIZATION

114. The Ordnance units in the Pentropic Division are:—

- (a) HQ CRAAOC
- (b) Div Ord Coy
- (c) Three Inf Workshop Stores Sections.

The only change from a tropical division is the replacement of the three ordnance field parks by the divisional ordnance company. The reasons for this change are discussed under the detailed consideration of that unit.

cussed under the detailed consideration of that unit.

HQ CRAAOC

115. The role of this unit has not changed from that of the tropical division. Briefly this is:—

- (a) The CRAAOC Division is responsible to the Divisional Commander for the efficiency of the ordnance services in the division, and to the DDOS Force for

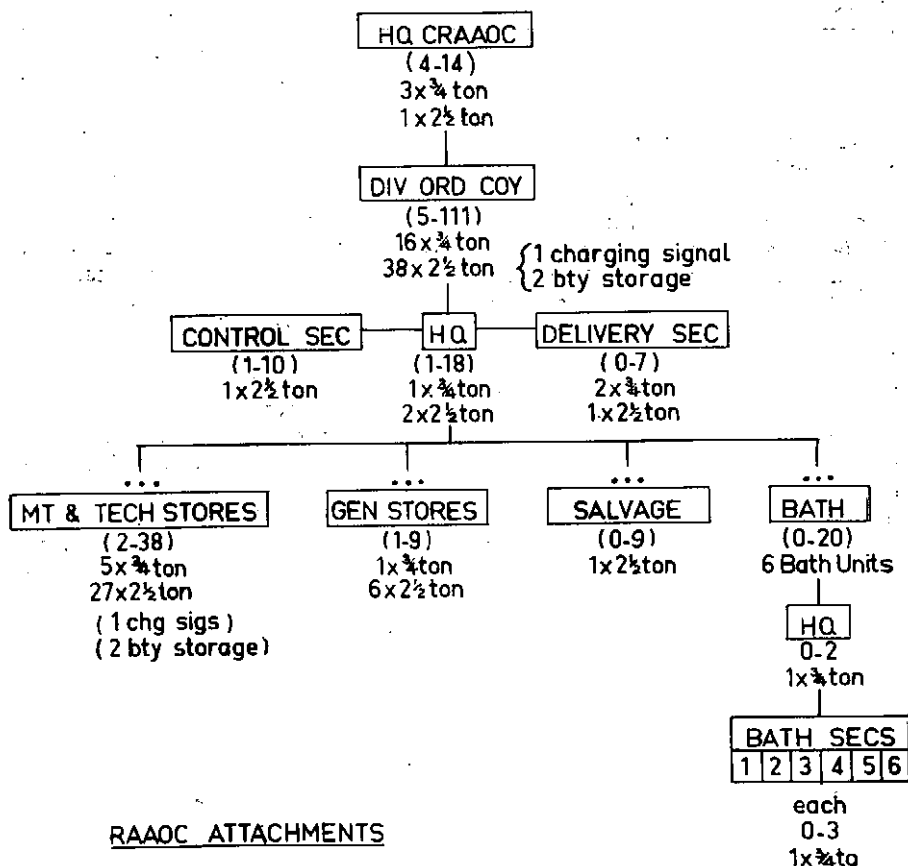
the technical methods by which he achieves that efficiency.

- (b) The CRAAOC acts as technical adviser to the divisional staff on all matters connected with ordnance services, and will

make all executive arrangements for the supply to divisional units of ordnance stores and vehicles.

116. The establishment of HQ CRAAOC also remains unchanged.

FIGURE 12. ORGANIZATION OF DIVISIONAL ORDNANCE UNITS



RAAOC ATTACHMENTS

Armd Regt	1	Inf Wksp Stores Secs (3)
Fd Regts	5	each
Battalions	15	(1-15)
RAASC	6	1x 3/4 ton 8x 2 1/2 ton

Tpt Coy Wksp Cells (9)

Lt Ac Coy Wksp Stores Cells (7)

The HQ is not self-supporting administratively, and must be located in and served by Rear Div. HQ.

117. Although the unit is not designed to split into two parts, it would be possible to provide ordnance representation on the Task Force HQ by detaching the second in command or divisional troops ordnance officer, and two clerks, for a limited period.

Div. Ordnance Company

118. The divisional ordnance company replaces the three ordnance field parks of the tropical division. The main reason for this change is the fact that the range of spare parts required to be carried in the division has increased, and the overheads required to hold this range in three separate units are no longer acceptable. Furthermore, although it was possible to detach one OFP to a brigade group, the work load of the ordnance units would become quite unbalanced if one OFP were detached with a battle group.

119. The role of the divisional ordnance company is as follows:—

- (a) To carry in stores lorries a forward holding of selected first-line spares for warlike equipments, and A, B and C vehicles, for issue to units in the formation (except RAEME workshops requirements for repair work).
- (b) A general stores platoon is included to hold a limited range of general stores. The bulk of the formation requirements of general stores, clothing and stationery are handled on a monthly bulk demand system, with the exception that sufficient clothing stocks are held to provide a 24-hour service to the infantry units only.

(c) A bath platoon is included, having six detachments, each of which operates a mobile shower equipment. Providing sufficient water points are available, these equipments can operate individually throughout the divisional area. No laundry facilities are included in the unit, but a clean change of underclothing will be provided for each man, and these will be laundered by the nearest CCS Laundry Pl. This unit has a secondary role of decontamination of personnel who have been subjected to nuclear fallout.

- (d) A salvage section is included to operate a divisional salvage collecting point, to which all salvage collected by units will be delivered. This section will sort, classify and distribute salvaged material in accordance with their condition, and current shortages. A RAEME element is included to assist in classification, and to remove assemblies and components from unserviceable equipments in accordance with the repair policy.
- (e) An additional trailer is included in the unit to carry the flame-throwing equipment for the infantry battle groups when there is no operational requirement for these to be with units.

120. It will be seen that this unit resembles the divisional ordnance field park which existed prior to the formation of a tropical division, but with the addition of the bath and salvage element. These latest additions are essential with the advent of nuclear warfare; the former for decontamination of personnel, and the latter for handling damaged equipment and salvage materials.

Although the bath element may be considered as an insurance to a certain extent, the value to the health and morale of the formation warrants its inclusion.

121. Although the organization chart does not show any capability to detach a sub-unit to support an independent battle group or task force, it will be possible to make such a detachment to provide very limited stores support and bathing facilities.

Infantry Workshop Stores Sections (Three)

122. The role of these sections is to provide in stores lorries a holding of spare parts and stores required by the parent workshop for the efficient execution of repair work. This is unchanged from the tropical division, and the establishment is almost identical. As in the tropical division, each stores section is under command of the OC RAEME workshop to which it is attached for all purposes except the technical control of its storeholding functions, which is the responsibility of the CRAAOC, and the administration of discipline to company level, which

is the responsibility of the OC of the stores section.

Ord Representation at Battalion HQ

123. In the tropical division, ordnance representation was provided on the brigade HQ by the inclusion of a brigade ordnance warrant officer. In the Pentropic Division, an assistant quartermaster (lieutenant, RAAOC) is included in the establishment of the battalion headquarters.

Reorganization with Existing Equipment

124. Reorganization with existing equipment presents no problem to the ordnance units of the Pentropic Division, with the exception that no bath equipment exists in Australia. Two American and one British type equipments are under consideration.

125. From the foregoing, it will be apparent that with very few minor exceptions the role of ordnance within the division is the same as that within the Tropical Division, but there is one major change in organization as a result of which a divisional ordnance company is introduced in place of ordnance field parks.



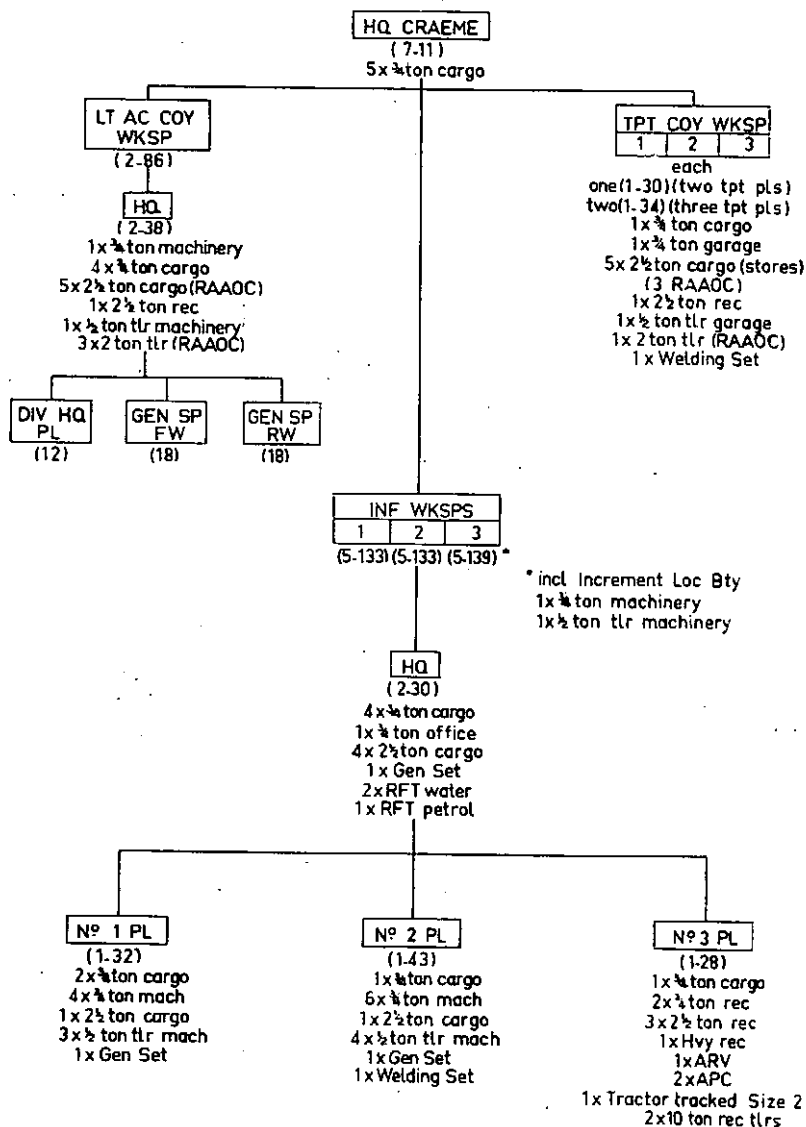
RAEME ORGANIZATION

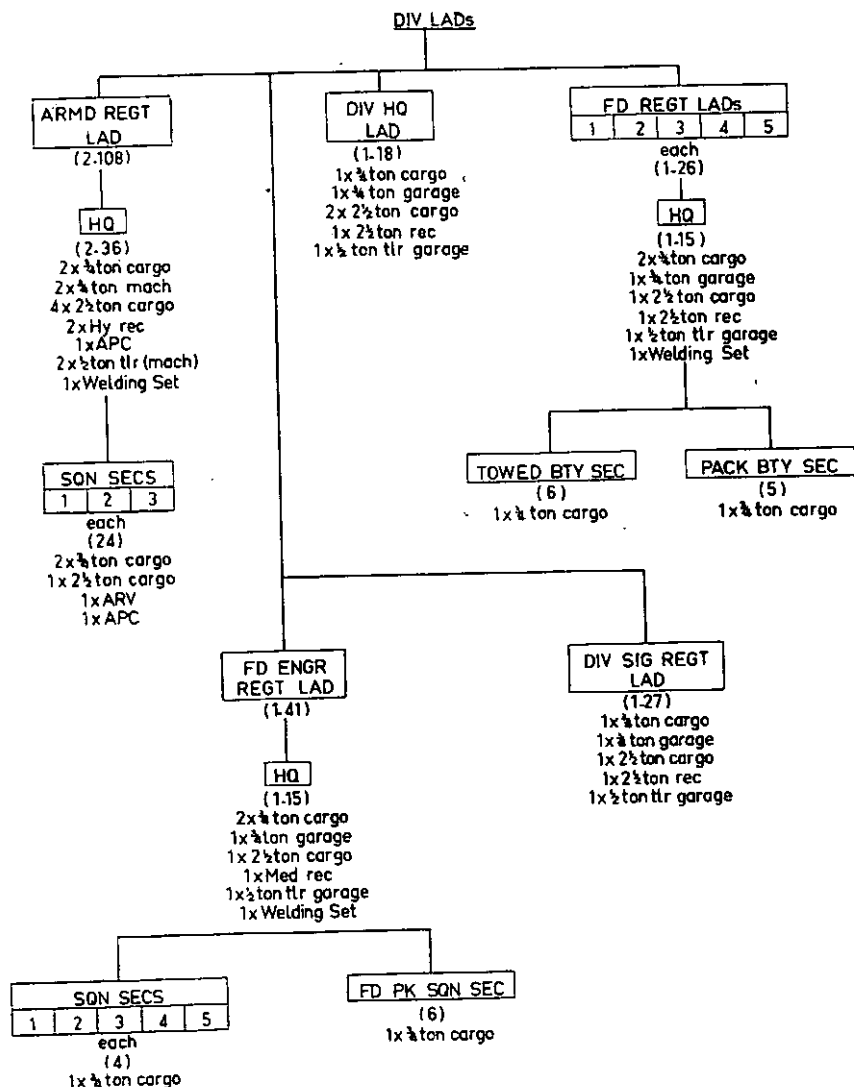
Main Changes

126. The basic RAEME organization proposed for the Pentropic Division is virtually the same as for the Tropical Division, except that:—

- (a) The size and structure of some RAEME units has been varied to meet the changed equipment load and, in the case of LADs, the changed organization of the parent units.

FIGURE 13. ORGANIZATION OF RAEME





RAEME ATTACHED - 93

Inf Bns	- 50	Recce Sqn	- 11	HQ RAA	- 4	Div Loc Bty	- 7
Fd Amb	- 12	Div Ord Coy	- 4	Pro	- 4	FS Sec	- 1

- (b) Tpt Coys RAASC have been provided with RAEME Workshops in lieu of LADs to carry out first and second line repairs.
- (c) Existing 3-ton Machinery Vehicles are replaced by $\frac{3}{4}$ -ton vehicles and $\frac{1}{2}$ -ton trailers.
- (d) Introduction of a new range of recovery vehicles—
- | | | |
|---------------------|---|---|
| $\frac{3}{4}$ -ton | { | Standard vehicles fitted with suitable recovery gear. |
| $2\frac{1}{2}$ -ton | | |
- Medium (6-ton) M62.
- (e) Introduction of Tank Towers—a wheeled tractor which requires design and development or could be purchased either locally or overseas. (UK have one under development.) This vehicle is required to tow tanks which cannot be repaired in situ from the forward area to Workshops or Back Loading Points, where they can be picked up by tank transporters. The introduction of the tank tower will permit the maximum availability, in the immediate battle area, of the limited number of ARVs available.
- (f) APCs have been included in the Inf Wksps (2 per Wksp) for use by the forward repair teams. If the APC selected for general use in the division is unsuitable for adoption for this role, a specialist vehicle will have to be developed.
- all equipment user units. Varying factors were considered such as:—
- (a) Although there has been a reduction of the number of rifles, the FN rifle requires $1\frac{2}{3}$ the first line repair effort of the .303 rifle, and overall three additional Fitters SA are required.
- (b) Although there has been an increase in numbers of B vehicles, there has been a big reduction in $2\frac{1}{2}$ -ton vehicles, making possible an overall decrease of 10 vehicle mechanics.
- (c) The increase in field artillery equipment and A vehicles is in the main offset by the deletion of the LAA regiment; however, the introduction of the Lt AC Coy Wksp has resulted in an overall increase in the RAEME workload.

Overall there is an increase of 44 RAEME personnel. This increase is related to the number and type of equipments and calculated on information provided as the study progressed. A comparison with the Tropical Division, however, indicates that the equipment increases are greater than expected, and when all unit establishments are available for study in detail there will undoubtedly be some alteration to the overall RAEME manpower—possibly an increase.

Repair Policy

128. RAEME establishments, as well as being based on the number and type of equipments in the division, have also been designed to meet the following repair policy:—

- (a) During active operations the primary object will be to keep the maximum quantity of equip-

Manpower Considerations

127. The RAEME manpower requirement for a Pentropic Division is directly related to the number of equipments of all types and the requirement to provide RAEME support as far forward as possible to

ment in the field in a state of operational fitness.

- (b) Units will be encouraged to undertake maximum self-help.
- (c) RAEME will concentrate on functional repairs without regard to appearance or comfort aspects.
- (d) Only group 1 modifications as appropriate will be carried out in the division.
- (e) Repairs will be carried out as far forward as the tactical situation will permit consistent with the nature of the task, parts, tools, time available and skill of personnel in order to reduce the time an equipment is out of action and to minimize back loadings.
- (f) In the absence of parts, improvisation and reclamation may be essential, and they will be undertaken only within the capacity of the tools and materials provided.
- (g) Repairs will be effected to the greatest extent practicable by replacement of accessible parts and components and easily handled assemblies.
- (h) First line recovery-units are responsible for first line recovery, and within the limits of their capacity will recover equipment to unit areas or to an Equipment Collecting Point. Generally, units are provided with attached RAEME elements to assist in this task. For units with no RAEME attached recovery assistance will be provided by RAEME second line recovery facilities under arrangements with DEME/CREME.
- (j) Second line recovery—RAEME is responsible for second line recovery.

RAEME Tasks

129. General.

Responsible for repair and recovery within the division and advice to the divisional commander on these matters.

130. HQ CRAEME

- (a) Co-ordination of repair and recovery within the division.
- (b) Technical advice to the commander.
- (c) Organized to establish advanced and rear headquarters with staff for control of forward repair and recovery.
- (d) Includes a staff officer to provide technical advice to brigade headquarters and to co-ordinate repair and recovery for detached battle groups as required.

131. Infantry Workshops

- (a) Responsible for field repair and recovery beyond the capacity of LADs or RAEME attached. Recovery platoons, which include forward repair teams, can be detached and grouped under CRAEME control during operations as required.
- (b) Three workshops are provided in the division. Their organization is identical, and each is capable of throwing off an advanced workshop detachment able to maintain one batt as required.

132. LADs.

Responsible for unit repairs and first line recovery of parent unit equipment. LADs are organized as for parent unit, for example, headquarters and squadron (battery, etc) sections.

133. 1/2 Line Workshops.

Responsible for unit and limited field repair and recovery of parent unit equipment.

PROVOST

134. The Pentropic Division study did not produce any new factors which would require major alterations to the current organization and duties of the Divisional Provost Company. The organization of a Provost Company is shown in Fig. 14. The accepted duties of the Provost Company are:—

- (a) The supervision and enforcement of disciplinary regulations at all times.
- (b) Traffic control.
- (c) Supervision of prisoners of war and the divisional PW cage.
- (d) Handling of refugees.

Organization, Command and Affiliation

135. The proposed Pentropic Division organization contains one company of Provost, commanded by a major. The company is mobile and has retained the motor cycle for this purpose.

136. Affiliation of sections, etc., to units and divisional HQ will still be possible and will probably follow the principles adopted previously.

137. It has been decided to increase the communications for Provost by including six PRC 10 man-pack wireless sets in the equipment table. These sets, although limited in range, will allow Provost to set

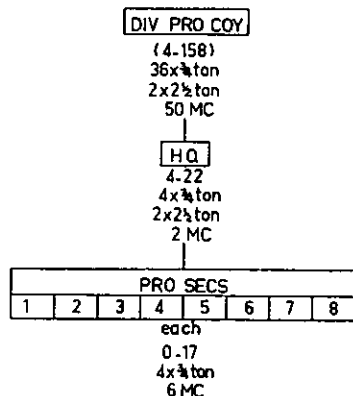
up their own wireless communications for a requirement such as traffic control. Line communications will still be provided as before, and additional short term wireless communication may be provided by the Signal Regiment for special requirements.

Staff Responsibility

138. Provost is represented at Divisional HQ by the Deputy Assistant Provost Marshal (DAPM) with the rank of major. The DAPM deals direct with the respective branches of the staff regarding provost matters and supervises the work of the Provost Company, to whom he gives his orders as from the staff. The DAPM will normally be located at Main Division HQ.

139. Provost must be used for specified tasks. Sections, etc., may be allotted as stated above, but adequate reserves must always be kept in hand. The DAPM must ensure that the best use is made of the limited provost personnel available, and must allot them in sufficient numbers to cope with such tasks as may be required. The task will be more difficult in tropical terrain, with widely dispersed units and limited communications.

FIG 14. OUTLINE ORGANIZATION OF DIVISION PROVOST COMPANY.



PAY

Div Cash Office (Type A)**140. Tasks.**

- (a) Provision of pay services for troops in the divisional area.
- (b) Preparation of field returns for submission to Base Cash Office

accompanied by pay acquittance and other vouchers.

- (c) Payment of indigenous labour employed in the divisional area.

141. Organization.

Consists of 1 officer and 9 other ranks and one vehicle.

POSTAL

Div Postal Unit**142. Tasks.**

- (a) Acceptance and delivery of postal articles, including registered articles and ordinary parcels.
- (b) The sale of postage stamps and postal notes.
- (c) Payment of postal notes.
- (d) Acceptance and delivery of telegrams.

143. Organization.

The divisional postal unit consists of a headquarters and two sections each constituting two field post offices. The unit has one officer, 21 other ranks and five vehicles.

144. Capabilities.

- (a) The system of delivery and collection of mail within the divisional area is designed to be as flexible as possible, to allow for variations in the divisional layout. The unit is capable of running a Divisional Distribution Office and a number of Field Post Offices.
- (b) The Divisional Distribution Office is normally located in the Divisional Administrative Area, mail being collected and delivered here by units. On some

occasions the Divisional Distribution Office may be located at a Refilling Point as an alternative to the Divisional Administrative Area.

- (c) Depending on the situation, Field Post Offices may be located with remote Battle Groups, Divisional Troops and/or any Task Force operating away from the remainder of the Division.
- (d) The Divisional Postal Unit collects mail at the Refilling Point from Base Postal Unit vehicles, except for any bulky second class mail which is being carried forward by RAASC vehicles when the load is too great to be brought forward through postal channels.

145. Changes from Previous Organization and Concept.

This organization has been derived from that of the Postal Unit RAE, Type "B" (Lower Establishment). The main differences from the latter are a reduction of 3 other ranks and one vehicle; and a capability of forming four post offices only, compared with five in the Type "B" organization.

AVIATION

146. Bearing in mind the reasons for the Pentropic Division organization, i.e., the need for small self-contained formations capable of independent operations and speedy movement, the likely theatre of operations and known enemy tactics, this division can only develop its potential effectiveness if it is adequately supported by aircraft.

These aircraft must be additional to those operated by an air force to provide offensive and transport support. They must be under command of the divisional commander and

must be capable of providing the following support:

- Normal and command liaison and reconnaissance.
- Communications.
- Casualty evacuation.
- Administrative and logistic support within the divisional area.

147. The roles and capabilities of army aviation elements of the UK and US have been studied, and the results have been applied to the organization of the Pentropic Division in the light of the special requirements detailed above, and it

FIGURE 15. OUTLINE ORGANIZATION OF DIVISIONAL LT AC COY.

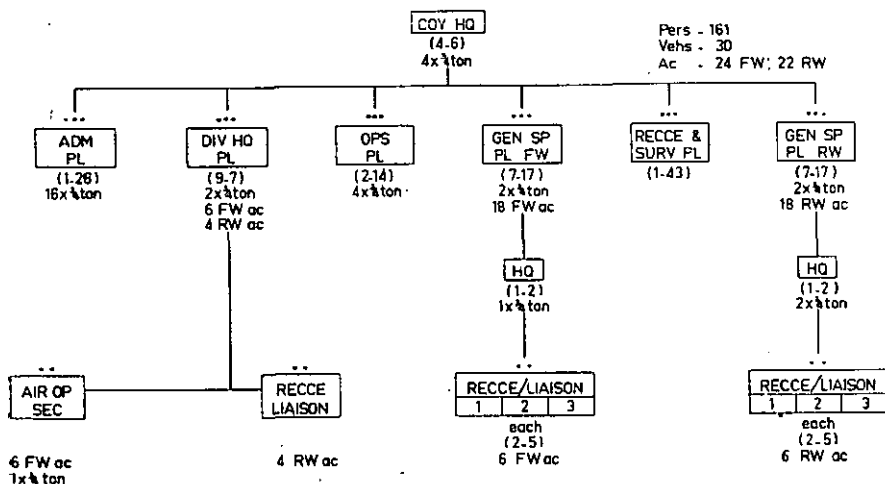
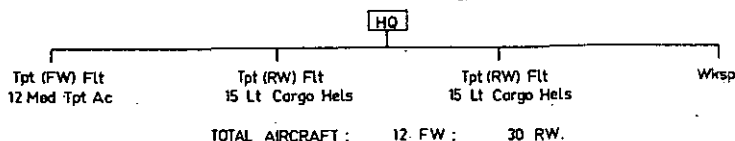


FIGURE 15a. MEDIUM AIR TRANSPORT SQUADRON

(Non Divisional)



was found that the aviation requirements of the Pentropic Division dictated two categories of aircraft, viz., light aircraft and medium transport aircraft.

148. These aircraft have been organized as follows:—

- (a) Divisional Light Aircraft Company.
- (b) Medium Air Transport Squadron.

Divisional Light Aircraft Company Organization

149. The company is commanded by a lieutenant-colonel and has a total strength of 161 all ranks. It is equipped with 24 fixed wing and 22 rotary wing aircraft. The outline organization is shown in Figure 15.

150. Briefly, the roles of the various platoons are:—

- (a) *Administration Platoon*—Beside carrying out the usual administrative tasks, this platoon will provide the means of refuelling aircraft so that it must be capable of detaching elements for operations with sections of the aircraft platoons.
- (b) *Operations Platoon*—This platoon is organized to provide meteorological information, air traffic control at the airfields throughout the Divisional Area, and the means whereby the commander exercises operational control over his aircraft.
- (c) *Divisional HQ Platoon*—Air OP and command liaison and reconnaissance.
- (d) *General Support Platoons*—All the tasks listed below excluding Air OP. It will be normal for these platoons to detach sections for operations. Each section commander will command all

aircraft operating from his airfield.

- (e) *Workshop*—Third line maintenance. There will be maintenance personnel permanently attached to each aircraft section to carry out 1st and 2nd line maintenance.
- (f) *Battlefield Surveillance Platoon.*

Tasks

151. Although the company has a limited stores and personnel carrying capacity—a total single lift of approximately 20,000 lb. or 116 persons—its basic role is to provide the means for rapid liaison and reconnaissance over undeveloped or close country.

152. The company tasks will include:—

- (a) Command and staff liaison.
- (b) Artillery observation.
- (c) Battlefield surveillance, including reconnaissance, to supplement reconnaissance carried out by the RAAF.
- (d) Limited aerial photography.
- (e) Communication duties, including message dropping and pick-up, photograph delivery and letter despatch service.
- (f) Cable laying and radio relay installation and maintenance.
- (g) Limited urgent carriage of freight and personnel.
- (h) Initial casualty evacuation.

Aircraft Types

153.

- (a) The fixed wing aircraft is the Cessna 180 type; it has the following characteristics — three passengers or 500 lb load (250 lb slung under each wing), a cruising speed of 128 mph with a range of 400 miles.

- (b) The rotary wing aircraft is the Hiller 12E type; it has the following characteristics—2 passengers or 2 stretcher cases or 500 lb load, a cruising speed of 98 mph with a range of 180 miles.

Medium Air Transport Squadron Organization

154. It is equipped with fixed wing medium transport aircraft and light cargo helicopters. A possible outline organization is shown in Figure 15(a).

Tasks

155. The squadron tasks will include:—

- (a) The tactical and administrative movement of personnel and small sub-units within the Army combat zone in the course of day-to-day operations over a sustained period.
- (b) Casualty evacuation and distribution from initial place of treatment to medical facilities within the combat zone or communication zone.
- (c) The movement of urgently required stores, equipment and supplies, supplementing where necessary the normal surface means.

- (d) The complete logistical support, either air landed or dropped, of small units which are operating beyond the reach of normal surface transport.
- (e) The emergency maintenance of sub-units or units cut off from their normal means of supply.
- (f) The dropping of small reconnaissance, protective or raiding parties ahead, or to the flanks, or the main force.

Aircraft Types

156.

- (a) The fixed wing aircraft is the Caribou type; it has the following characteristics—twin engined, tail loading, a range of 600 miles with a payload of 6/7000 lb or 25 soldiers or 12 stretcher cases, capable of being used for parachuting and supply dropping. It can operate from improvised airstrips and will take-off and land over a 50 ft obstacle within 1000 ft (at sea-level, zero wind) carrying the above payload.
- (b) The rotary wing aircraft is the Sikorsky H34 type capable of transporting 4000 lb or 12 soldiers or 8 stretcher cases at 100 mph with a 400-mile range.

COMMAND AND CONTROL

157. The headquarters of the Pen-tropic Division is generally similar to that of the existing tropical division except for the following additions:—

- (a) A small independent staff called a "task force" headquarters, which can be used to provide an alternate headquarters.
- (b) A deputy divisional commander

who commands the task force headquarters as required.

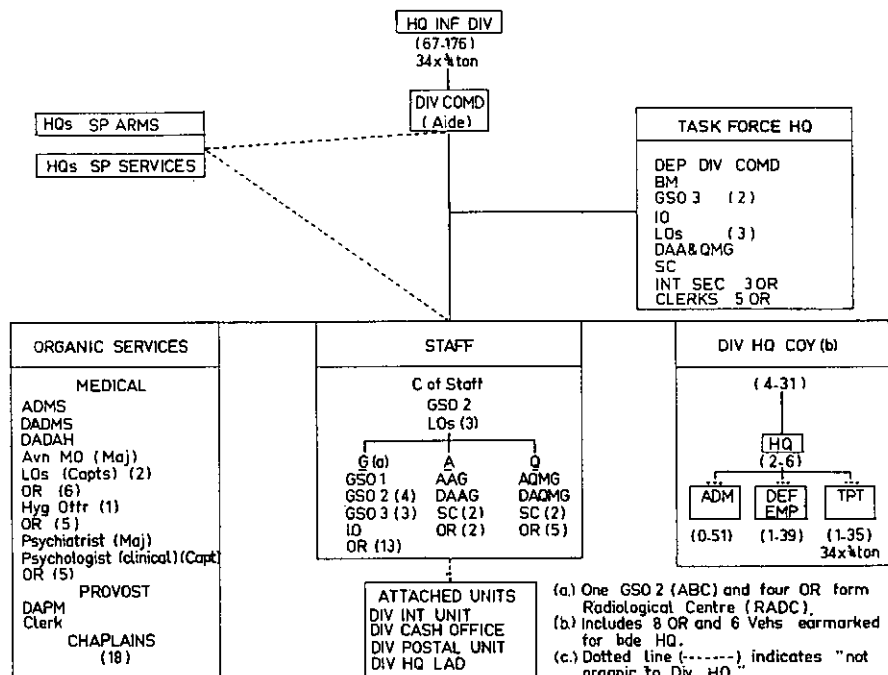
- (c) A chief of staff.
- (d) A Radiological Centre.

The outline organization of the headquarters is shown in Figure 16.

Employment

158. During active operations the forward echelon of divisional headquarters is normally deployed in two

FIGURE 16. OUTLINE ORGANIZATION OF DIVISIONAL HEADQUARTERS



locations, main and task force headquarters. The two are separated to reduce the vulnerability of both being destroyed in single atomic attack. In a rapidly moving situation the divisional commander may also establish a small tactical command post.

Task Force Headquarters

159. The Task Force Headquarters is established under the deputy divisional commander. Its functions are:—

- To command, control and supervise operations of one or more subordinate units when the divisional commander wishes to reduce his span of control over such units.

- To function as an alternate division headquarters, capable temporarily of taking over the command of the division in an emergency. (It cannot do this over a sustained period without augmentation.)

- To command a task force.

- To supervise major activities of the division, such as infantry training or the rehabilitation of units.

Deputy Divisional Commander

160. The Deputy Divisional Commander normally functions from the task force headquarters in a capacity directed by the divisional commander. He keeps abreast of the situation at all times, so that he is

36
17
252
36
112

always ready to assume control. He may perform the following tasks:—

- (a) Command task forces using task force headquarters.
- (b) Serve as director for long-range planning.
- (c) Assist the commander when sufficient control of the situation requires additional high-level supervision.
- (d) Supervise training matters within the division.
- (e) Serve as principal adviser to the commander in formulating policy and plans.
- (f) Perform such other duties as the divisional commander directs.

Organization for Combat

161. The organization of the Pen-tropic Division gives the commander greater flexibility in grouping for combat. The pattern of his organization may vary with each situation and will represent a tailoring of divisional elements to meet the specific requirements of the plan. It may be altered rapidly to meet adjustments or changes in plan.

162. In organizing for combat, the basic combat elements—the five battalions, the armoured regiment, the reconnaissance squadron and the five artillery regiments—may be combined in varying proportions. Engineer, aviation and service elements may be attached to groups as required. Combat units supporting the division, for example, the APC regiment, medium regiment, Lacrosse battery, LAA regiment, etc., will be employed as required. Such units or portion thereof will be placed in support or under command of either the division or battle groups.

An important factor to be considered in organizing for combat is

effective control. Hence on occasions the divisional commander may employ the battalion headquarters to control two or more battle groups and reinforcing elements when acting together to perform a single task, and may form other organizations under designated commanders to reduce the span of control of the division.

Task Forces

163. Situations in South-East Asia may frequently favour the use of a task force. In general there are two broad types of control under which task forces may be employed:—

- (a) Operate under close divisional control, with the task force headquarters operating in a manner similar to that of a battalion headquarters.
- (b) Operate independently or semi-independently when beyond controlling distance of the divisional headquarters.

Organization and Command

164. A Task Force will consist of two or more infantry battalions to which have been added supporting arms and services. It will be formed for a specific task and will be commanded by the Task Force Headquarters. A force consisting of an infantry battalion and an armoured regiment with additional supporting arms and services would also be a task force.

Radiological Centre

165. In any operations in which the use of nuclear weapons by enemy or friendly forces is a possibility, control measures must include an organization to ensure that accurate and up-to-date information is always available to the commander regarding areas which constitute a

radiological hazard and the extent of the hazard.

166. Radiological monitoring and survey are carried out by unit personnel equipped with radiac instruments. The value of the information obtained depends on prompt transmission to a central co-ordinating organization and its collation and dissemination to all concerned.

167. To carry out this function a Radiological Centre (RADC) is provided as a staff element of divisional headquarters. It consists of the GSO2 (ABC) and 4 other ranks, with appropriate plotting and computing equipment.

EQUIPMENT

168. The vehicles, weapons and other equipment with which a unit or formation is equipped have a big influence on its organization. Thus, in designing the organization of their units, it was necessary for Arms and Services Directors to have a clear idea of the equipments to be used. At the same time the reorganization was a great opportunity to review weapons and equipment generally to make certain that the new division employed the best items available from Australian and overseas sources now and in the future.

169. For various reasons, many equipments may not be in service immediately. Some may still be under development; others, being of low priority, may have to wait until money is available to develop or buy them.

170. However, with equipments available to us now, the division is an efficient fighting formation; the later inclusion of more effective weapons will merely result in greater efficiency and a more battle-worthy force.

NEW TECHNIQUES

171. In common with the other armies of the world, we in Australia are continually studying new techniques in the design and operation of vehicles and weapons. For instance, it is most important that the division in general and battalions in particular should be capable of crossing water obstacles quickly. Therefore, in the long term, all vehicles should be designed to float. However, it may be some years before these types are developed and in service. Consequently, alternative techniques are being examined, and the acceptable interim solution will be simple, inflatable, man-portable flotation equipment to be attached to the vehicle by the crew.

172. Rolling fluid transporters with capacities of the order of 400 to 1000 gallons, capable of being towed by both $\frac{3}{4}$ ton and $2\frac{1}{2}$ ton GS vehicles, may be introduced to replace tanker vehicles for petrol and water re-supply. The savings in road space and road and vehicle maintenance are obvious.

Simplicity

173. Every effort is being made to meet the need for a simplified family of vehicles and weapons. Every step that can be taken to reduce the range will result in a reduction of administrative overheads. Naturally it is quite impracticable to design one vehicle or one weapon that will be capable of doing all tasks. But the fewer the better. For example, two basic types of vehicle only have been included: the $\frac{3}{4}$ ton and $2\frac{1}{2}$ ton. One general purpose machine-gun may be employed, combining both the LMG and MMG types now in service, using the same ammunition as the basic rifle.

Air-portability

174. Particular attention has been paid to the desirability of all vehicles and weapons to be air-portable, both by fixed and rotary wing transport aircraft. The result will be increased mobility and capacity to support the infantry soldier in any terrain he may encounter.

Standardization

175. All vehicles and equipment will be compatible and, where practicable, standardised with USA types. The capacity to use common items of ammunition and fuels; the standardization of vehicle types and payloads; the use of similar radio techniques and frequencies; all these will assist in developing increased allied effort in a theatre of operations, and simplify both tactical and logistic planning.

NON-DIVISIONAL TROOPS

General

176. Whilst it is not intended to discuss non-divisional troops in any detail, this article would be incomplete without some reference to the units required to support the division.

177. An examination was made to determine what combat troops were essential to support the division, assuming it was operating independently. The units decided on are shown below as the Combat Support Group. In the event of the division becoming part of a Corps, the Combat Support Group is merged into the normal Corps structure; however the units shown must be available to the Pentropic Division as and when required.

Combat Support Group

178. These are combat units which must be available to the division, together with the logistic elements required for the intimate support of

the group. The combat units concerned are listed below. The need to have these units available to the division is readily apparent.

Armour — Recce Regt (less sqn)

APC Regt

A Tk Regt

% ARG

Arty — Med Regt

Lacrosse Bty

LAA Regt

SAGW (HAWK) Bty

% Corps Loc Regt

Engrs — Corps Engr Regt

Plant Sqn

Corps Fd Pk Sqn

Sigs — % Corps Sig Regt and miscellaneous attached troops (incl EW element).

Inf — SAS Coy

Notes on most of these units and the reasons for their inclusion are given in the paragraphs relating to the respective Arms and Services.

CONCLUSION

179. The Pentropic Division provides something that all Armies have been striving for—more combat power in a smaller division. It remains now to determine whether or not the organization is in all ways the best possible for our particular requirements. This means an intensive training programme, in which exercises are designed to test the efficiency of the organization at all levels. All officers should study the new division and give great thought to its employment, both tactically and logistically.

180. New organizations arise from new situations and demand new thinking. The flexibility inherent in the Pentropic Division must be matched by a flexibility of thought on the part of all officers of the AMF.