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TACTICS A

LECTURE TWO

LECTURE NOTES FOR SENIOR STAFF COURSE QUALIFYING EXAMINATION

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Chief of Army Staff

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NOTE

Any Mistake, Omission and Advice on the Module should be forwarded to:

THE COMD
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TABLE OF CONTENTS

6. MOCK EXAMINATION

CHAPTER 1

CONTROL OF DEMOLITIONS

INTRODUCTION

1. In every land op, much premium is given to demolition either in the advance or withdrawal. Demolitions are normally prepared and blown by sappers. However, the control of what is to be destroyed, and when, is entirely the responsibility of a commander and his Staff.

OBJECTIVES

2. On the completion of this Chapter officers should:

   a. **Know.**

      (1) Types of Demolition.

      (2) Duties of the following:

         (a) Guard Commander.

         (b) Firing Party Commander.

      (3) The documentation.

      (4) The importance associated with control points.

   b. **Understand.**

      (1) The Command and staff responsibilities.

      (2) The defence of a reserved demolition.

      (3) The withdrawal of the demolition guard.

3. **Types of Demolition**. Demolitions are classified as:

   a. **Preliminary**. Preliminary demolitions are those that do not

interfere with our planned tactical movement. Normally, the commander will delegate authority to fire these demolitions to the engineers as soon as there is no danger of prejudicing surprise or otherwise affecting operations. The earlier preliminary demolitions are fired the better, in order to release engineers for other tasks.

b. **Reserved**. Reserved demolitions play a vital part in the tactical or strategic plan. The overall commander will control these demolitions and, he's responsible for ordering the firing. Reserved demolitions pose 3 main problems:

(1) **Site must be Open to Traffic until Fired**. This may mean that simple and quick demolition techniques cannot be used. Rapid Demolition Device (RDD); crates containing large quantity of slap explosive, cannot be kept in position across a bridge, nor can all methods of road cratering be adopted unless special method of protecting the means of firing are used.

(2) **Time and Effort in Preparation**. Every reserved demolition must be prepared as a long-standing demolition, able to withstand the effects of weather and traffic vibrations for some time. There must be no possibility of failure; so duplicated firing circuits have to be used. These refinements require more time and effort. Because of maintenance problems and non-productiveness of engineer effort committed on such demolitions that will not be available for other tasks, an engineer regiment should undertake very few reserved demolitions; usually not more than 4.

(3) **Firing Parties**. From the time a reserved demolition is prepared, it absorbs a firing party doing no other engineer work. Too many reserved demolitions are bound to tie down engineer troops, which would affect other engineer tasks.

4. Under the general classification 'demolition' includes the destruction of bridges of all kinds such as:

a. Fixed span bridges over water obstacles.

b. Railway bridges of all types.

c. Viaducts

d. Military equipment bridges in use by own troops.

5. The term also includes, for the purpose of this module:

a. The closing of lanes in minefields.

b. Cratering of roads and defiles.

c. The blocking of approaches by felling trees or blowing in the side of cutting or by destroying buildings.

d. The destruction of causeways or fords.

e. The destruction of ferries - military or civilian.

f. Inundation by blowing dams, flood gates, canal banks etc.

RESERVED DEMOLITIONS

6. **Authorized Commander**. The officer empowered to authorize the firing of a reserved demolition is called the authorized commander. As the withdrawal proceeds, authority may be delegated to lower commanders who then become the authorized commanders.

7. **Demolition Guard**. A demolition guard is a locally positioned force whose task is to ensure that the site of a demolition is not captured by the enemy before it is successfully fired.

8. **Demolition Firing Party**. The demolition firing party is technically responsible for the demolition. It is normally an engineer party and is often commanded by a junior NCO.

9. **Technical Definitions**.

a. **Uncharged.** A demolition target which has been prepared to receive charges, the latter being packaged and stored in a safe place.

b. **Charged**. A demolition in which all charges have been placed and which is at one of the states of readiness below:

(1) **State of Readiness "1" (SAFE).** The demolition charge has been placed and secured. The vertical and horizontal ring mains are disconnected and the detonators are not inserted in the 2 initiating sets.

(2) **State of Readiness "2" (ARMED).** Demolition is ready for immediate firing.

The danger of premature firing caused by the close explosion of a bomb or shell when the demolition is armed must be balanced against the time required to bring the demolition from state of readiness "1" (SAFE) to "2" (ARMED). This time will vary with the complexity of the demolition and engineer advice must be obtained. It could take as much as 20 minutes on a large bridge.

c. **Completion**. It is wrong to consider that the firing of a demolition is necessarily the same as completion. Engineers may well require some time after the firing to ensure that the demolition is effective. Time to complete can only be assessed by the men who designed the demolition and will vary in every case. For a major road bridge over a deep water obstacle, the outing of a main span may well complete the demolition. However, in the case of closing a minefield lane (which may involve cratering); it may often be necessary to scatter anti-tank and anti-personnel mines after the craters have been blown. It will be necessary in this case for engineers to continue to be protected by the demolition guard until completion. In the event of a misfire or only partial destruction, the demolition guard must clearly continue to provide protection while the charges are reset or additional charges placed on the demolition.

COMMAND RESPONSIBILITIES

10. **The Authorized Commander**. Initially, the authorized commander will be the formation commander responsible for the operational plan and he:

a. Classifies a demolition as reserved.

b. Orders a formation or unit to provide a demolition guard.

c. Orders whether or not the demolition should be fired on the initiative of the commander on the spot in case of imminent capture.

d. Orders changes, as necessary, in the state of readiness.

e. Orders the demolition to be fired.

At any stage, before or during the operation, the authorized commander may delegate these responsibilities. For example, when one formation withdraws through another which is holding an intermediate position; it is normal for control to pass to the commander of the holding formation who then becomes the authorized commander. Delegation of control is an important command decision.

11. **The Engineer Commander**. The Engr Comd does the fol:

a. Advises the formation commander on the technical factors, including engineer effort available, affecting his choice of reserved demolitions.

b. Orders the preparation of the demolition.

c. Provides the demolition firing party.

d. Initiates the instructions for the commander of the demolition firing party on AF W4012B (Annex A).

12. **The Demolition Guard Commander**. He receives his initial orders on AF W4012C (Annex B) and thereafter:

a. Commands all troops at the demolition site including the demolition firing party.

b. Ensures the safety of the demolition from enemy attack or sabotage.

c. Controls traffic and refugees.

d. Passes to the commander of the demolition firing party orders in writing on the AF W4012B to change the state of readiness, and in most circumstances to fire the demolition.

e. Keeps the authorized commander informed of the state of

preparation of the demolition and the operational situation at the demolition site.

f. After the demolition, he reports to the authorized commander on its effectiveness.

13. **Commander Demolition Firing Party**. He is an engineer who:

a. Maintains the state of readiness ordered.

b. Fires the demolition when ordered and ensures it is successful.

c. Reports the result of the demolition.

COMMUNICATIONS

14. The authorized commander must ensure that there is a clear cut channel whereby he can pass orders to the commander of the demolition firing party to change the state of readiness and to fire the demolition. This channel will normally be through the demolition guard commander, whose command includes the firing party, and must be known and understood by all concerned. To ensure success, a combination of methods will often be used:

a. **Normal Command Channels**. With several links involved this may lead to delay, but it has the advantage that many of those concerned are automatically kept in the picture.

b. **A LO with a Radio Set**. This is often valuable as the demolition guard commander can then devote himself to his other duties in the immediate vicinity of the target.

c. **Pool Radio**. A pool radio set allotted to the demolition guard commander, either on the appropriate command net or on a special

net.

d. **Engineer Net**. There should be provision for an engineer net.

e. **Arty Communication**. Artillery communications to an OP with the demolition guard commander.

f. **Orders**. The orders may be given personally on the spot by the authorized commander.

STAFF RESPONSIBILITIES

15. The staff must ensure that:

a. The formation commander's orders as in Paragraph (10a - e) reach all concerned. This is best done in the form of an annex to an operation order. Orders concerning preliminary demolitions can also be given in this form. They should make clear what routes or areas are closed to traffic and from what time.

b. Any special communications required to pass the formation commander's orders to change states of readiness and to fire, are set up.

c. Demolition Guard Commanders are issued with written orders on AF W4012C; see Paragraph 16c below.

16. **AF W4012C - Orders to the Demolition Guard Commander**. This proforma is self-explanatory but the following points should be particularly noted:

a. The form can be completed from the information in the suggested annex to the operation orders, so that it needs not necessarily be completed by the headquarters issuing the operation

order. It is the responsibility of the staff to issue this form, not the engineers.

b. "**Codesign**" should be interpreted as "nickname". This is for easy reference to the location, e.g. "RABBIT TABLE 675892". This must not be confused with a code word, used to give an executive order.

c. One Sub-Paragraph 14 must be deleted. The authorized commander must therefore make up his mind whether the demolition guard commander should be allowed to fire on his own initiative in a real emergency or not.

d. A code word meaning "The Authorized Commander is changed to..." should be added to Part V of the Form. The delegation of authority to fire should be passed to the demolition guard commander and the new authorized commander using this code word and the address group or encoded title of the new authorized commander. An effective time can be added in code if required.

e. Every potentially authorized commander must have a copy of the AF W4012C. When authority is to be delegated to an unforeseen commander, the current authorized commander must pass his own copy of AF W4012C to the new authorized commander.

17. **AF W4012B - Orders to the Commander Demolition Firing Party.** It caters for several possibilities:

a. Preliminary demolition (Paragraphs 4(a) or 4(b).

b. A reserved demolition with a demolition guard (Paragraph 4(d).

c. A reserved demolition with no demolition guard (Paragraph 4© or 4(d). Paragraph 5 is the equivalent of Paragraph 14 on AF W4012C and must in this case, be completed. In this situation, the staff is of course responsible for ensuring that AF W4012B is correctly completed in accordance with the Commander's orders for the reserved demolition.

18. **Modification for Road Denial Bands**. The final withdrawal routes through a road denial band may contain a large number of minor demolitions and it will be normal for the demolitions on one route to be grouped under one set of orders. The authorized commander will finally be the battalion or company commander of the covering troops withdrawing on the route.

PLANNING TIMES

19. The time and labour needed to prepare a demolition will vary from 2 section hours for a group of craters to one troop day for a 1,000 foot bridge. In an emergency, demolitions may be carried out much more quickly by using Rapid Demolition Devices. It must be appreciated, however, that much more explosive is required.

DEMOLITION GUARD DUTIES IN RESERVED DEMOLITION

20. **Definition**. Any demolition which is not to be blown without the authority of the authorized commander is a reserved demolition. By implication reserved demolitions are confined to those demolitions which if they fell intact into enemy hands would seriously prejudice the tactical

situation.

21. **Duties**. The task of the demolition guard is to ensure that the enemy does not capture the demolition before it has been successfully fired.

DEFENCE OF A RESERVED DEMOLITION

22. **Infantry**. The demolition guard must be deployed so as to give all-round protection and to deny the enemy observation of the demolition and the ability to bring aimed fire unto it. In the case of a bridge, some infantry should actually be on it to prevent the physical removal of the charges, either by enemy or saboteurs, and to guard against underwater attack.

23. **APCs**. If the demolition guard is provided by mechanized infantry, their APCs should not be on the far side of the demolition after it has been fired due to the various problems of recovering them. There could also be problems withdrawing them just prior to firing the demolition as there may be traffic congestion in the area. If they have to swim back across the river, it will require careful pre-reconnaissance and the APCs will have to be prepared for swimming. It will inevitably be a slow, noisy and hazardous operation. It is therefore best, whenever possible, to leave APCs on the home bank.

24. **Guarding Bridges**. When guarding a bridge against under water attack, sentries must be placed to watch for frogmen. Special attention should be paid to the upstream side of the bridge. A boat should be close at hand with a standby group detailed to man it. Additional methods of guarding against under water attacks are the positioning of coils of dannert wire in the river and the dropping of concoction charges at irregular intervals

into the river.

25. **Anti-tank Guns**. If tanks are sited on the far side, it may be necessary for anti-tank guns to be there also. However, if they are, they should be withdrawn before the demolition is fired. Alternatively, in the case of a river, they could be brought back in assault boats after the demolition is fired. At least one anti-tank weapon must always be sited to cover the demolition from the home side.

26. **Radar**. If radars are available, it may be best to place them on the home side, sited to cover the rear and flanks, because of the problems of getting the equipment back. However, the tactical requirements will dictate how best they should be used.

27. **Reserve**. Whenever possible the demolition guard commander must maintain a reserve to deal with enemy coup de-main parties.

28. **Armour**. There is usually a temptation to site Armoured Fighting Vehicles (AFVs) on the 'home bank' of a reserved demolition. In most cases however, it is prudent to deploy some of the armour on the enemy side of the obstacle in positions which offer the best fields of observation and a covered withdrawal. These AFVs may require infantry protection, especially at night.

29. **Fire Support**. There are no special problems in fire planning. Gun and mortar tasks are coordinated quite normally. It will be usual to have both FOOs and MFCs in good CPs close to the bridge. Air defence of the bridge will be important.

30. **Air Support**. Air support may play a more important role than usual and a Forward Air Controller (FAC) should be allotted to the demolition guard whenever possible.

31. **Day/Night Plan**. At night it will often be necessary for the demolition guard to move close to the demolition and plans must be made to cover this. The handling of armour at night requires special thought.

WITHDRAWAL OF UNITS

32. **Check Point**. A Check point will always be necessary to check the passage of units withdrawing through the obstacle. Every unit must send a liaison officer back to the check point on time. Each liaison officer must have good communication to his own unit and to the demolition guard commander. In addition, he must know the composition of his unit withdrawing and when possible the number of vehicles to expect.

33. **The Demolition Guard**. The demolition guard is responsible for the check point and must have a representative there. Military Police may sometimes assist with the running of the check point. Good communication is essential between the check point and the demolition guard commander.

34. **Location of the Check Point**. It must be sited conveniently so that all units from several different directions to the check point will have to be close to, or even on the reserved demolition. In other circumstances, for example when the demolition is in a defile, the check point can be sited well forward and clear of the demolition. In such cases it may be located with the

road block.

35. **Road Block**. It will always be necessary to establish a road block where there is main route to the reserved demolition. Good communications between the road block and the demolition guard commander, neighbouring troops and the check point, if separate from the road block, are essential. The selection of a reliable road block commander is important.

36. **Functions of Road Block**. The functions of the road block are:

a. Prevent enemy 'bouncing' the demolition.

b. Control the movement of refugees and stragglers. It will also require an area in which refugees can be held and marshalled, if necessary.

37. **Identification**. When units are withdrawing in contact with the enemy great problems of identifying our own troops are likely to arise. It is the responsibility of the withdrawing troops to identify themselves to the demolition guard.

WITHDRAWAL OF THE DEMOLITION GUARD

38. **From the Demolition Danger Zone**. If our troops are within the danger zone of the demolition itself and are not protected they must be moved before firing. They must notify the commander when they are clear of the danger zone.

39. **From the Far Side of the Demolition**. Once the demolition has been successfully blown, the demolition guard on the far side will be ordered to withdraw. In the case of a river, pre-positioned boats or rafts may be used,

or in extreme cases troops may have to swim. If the reserved demolition is through a minefield, lanes will be used. On the other hand if the reserved demolition is part of an obstacle belt, defile or pass, it may be necessary to withdraw the troops before the demolition is fired. The possibility of using helicopters in certain circumstances would not be overlooked.

COMMAND AND CONTROL

40. **Command Post**. Ideally, the command post should be sited where it can best command the defence of the demolition from the home side. This may conflict with the requirements of the demolition firing point which should be close to and if possible with the command post. If a satisfactory compromise is not possible it may be necessary for the command post to accept an inferior location so as to be with the firing point. The grave consequences which can arise if this is not done should not be underestimated.

41. **Firing Point**. The firing point must give protection to the firing party and will be sited on the home side, and if possible slightly to a flank so that the demolition can be clearly seen. The distance from the demolition will be limited by the amount of cable available.

42. **Location of Commanders**. From the time that the demolition is prepared, to State of Readiness "2" (ARMED) until the time that the order to fire the demolition is passed to the demolition firing party commander, the demolition guard commander and the demolition firing party commander should be together at all times. If there is a break in the firing circuit, the firing party commander should order 2 men to check the circuit and should

not go himself to do it.

ALTERNATIVE PLANS

43. **Command Post and Firing Point**. There must always be an alternative command post and firing point. Usually this will be on the far side. For a large demolition, 2 alternative sites, one on either side, may be necessary.

44. **Withdrawing Units**. Higher command should always have alternative plans made for the recovery of withdrawing units should the demolition be prematurely destroyed. These plans must be known by the demolition guard commander, and may include the earmarking of ferries or bridging equipment.

45. **Traffic Control**. The military police, when available will be useful in assisting with this and especially with the control of refugees. If not, a part of the resources of the demolition guard must be allocated to traffic control.

46. **Firing**. Firing circuit cable should be placed carefully to one side of the traffic route to avoid being snapped or fouled by passing vehicles. There will normally be 2 independent circuits.

47. **Recovery**. It is essential to have recovery vehicles located close to the home side of the demolition with their towing cables run out across the demolition so that any blockage can be quickly cleared.

48. **Seniority Rolls**. Seniority rolls must be made out for both the demolition guard and the firing party. These rolls must be known to all and

there must never be any doubt as to who is in command at any point in time.

FIRING PROCEDURE

49. **Changing States of Readiness**. On arrival at the reserved demolition, the demolition guard commander must find out how long it takes to change the state of readiness of the demolition and how long it takes to complete the demolition after firing e.g. nuisance mining of the area. This information must be passed to the authorized commander. He must also check on his means of communication in Paragraph 4 of AF W4012C (Annex B to Part 1). On receipt of the order to change the state of readiness of the demolition, the guard commander will fill in Paragraph 8 of his form and Paragraph 3 of the firing party commander's AF W4012B (Annex G to Part 1). He will then report the change of state of readiness of the demolition as stated in Paragraph 9 of his instructions.

50. **Changes in Authorized Commander**. The guard commander must pay particular attention to the instructions in Paragraphs 14 and 16 and to the relevant codewords in Part V of the AF W4012C.

51. **Orders to Fire**. On receipt of the order to fire the demolition, the guard commander will pass it to the commander of the demolition firing party and fill in Part IV of AF W4012B.

52. **Misfire Drill**. Should the electrical circuit be broken, the demolition guard commander must allow time for the firing party commander to go forward and initiate the firing of the demolition by means of the safety fuse initiation set.

53. **Inspection and Reporting**. The firing party commander must inspect the demolition after it has been fired and report the results on the engineer net and return the completed form (AF W4012B) as detailed in Paragraph 13. The demolition guard commander must also report the results immediately to the authorized commander.

54. **Security**. The codewords in Part V of the guard commander's instructions must be carefully noted.

SUMMARY

55. The successful firing of the reserved demolition will depend largely on the skill of the defence of the demolition. Plans must be made to cover all foreseeable contingencies and the withdrawal of units through the demolition requires careful co-ordination.

TEST QUESTIONS

56. Write out the answers to the following questions based on this Chapter:

a. What are the types of demolition?
b. Define a reserved demolition?
c. What is a Demolition Guard?
d. What does 'charged' and 'uncharged' mean?
e. What is Demolition Firing Party?
f. Who is the Authorized Commander?
g. What are the responsibilities of the Authorized Commander?
h. What are the functions of the road block?

i. How should the command post be sited?

Annexes:

A. AF W4012B.

B. AF W4012C.

CHAPTER 2

OBSTACLES

INTRODUCTION

1. The aim of this Chapter is to broadly outline obstacles and their part in military operations as a lead into the next Chapter that deals with breaching of enemy obstacles.

BACKGROUND

2. An obstacle is defined as “hindrance or impediment” in the dictionary. This is realistic in military terminology also as no obstacle should be thought of as impenetrable but rather in terms of the degree of delay it will impose. This in turn is related to the ability of the attacker to break, cross over, or go through the obstacles and the defender takes advantage of the hindrance it imposes.

3. Obstacles can be natural (rivers, marshes, wood, hill features) or artificial (minefields, cratering, wire, tank ditches, tree blow-down and chemical or radiological barriers) or a combination of natural and artificial (mine in rivers, wire in woods, crating of roads and tracks crossing escarpments) where the process is one of accentuating by artificial means the natural difficulties of a piece of ground. It is important to remember when reading this Chapter that the word ’crossing’ will be used in the widest sense of passing over or through an obstacle, by breaching or by bridging or

rafting etc.

4. Obstacles have impact in all phases of war. It is therefore important to define in tactical terms what obstacles can and cannot do before considering the technical and organizational problems involved in creating or crossing them. While it is appreciated that many of these technical and organizational problems must be solved by specialists, commanders and staff officers must be aware of the nature of the problems. If they are not so aware, there is a grave danger that they will make unrealistic assessments of the delaying effects of obstacles or underestimate the problems to be overcome in crossing them. Both could have serious consequences.

5. The effect of obstacles on an attacker should be cumulative in 3 ways. First, the fact that casualties are being caused by the obstacles themselves (particularly mines and booby traps) is likely in time to induce extreme caution. Knowledge that no road or verge is 'safe', no bridge site unmined, no crater or fallen tree unbooby trapped, will tend to make an enemy uncertain and tentative in his movements. Secondly, the breaching of successive obstacles will use up engineer resources until the attacker is slowed down or even stopped. For these reasons, one of the prime targets both of our own obstacles plan and long range weapons (particularly aircraft) must be enemy engineers and their equipment which will tend to travel some distance in rear of reconnaissance forces. Lastly, while tracked vehicles may be able to by-pass-obstacles, wheeled vehicles may not. The effect of this may be to separate assaulting echelons from their logistic support.

OBJECTIVES

6. By the completion of this Chapter officers should:

a. **Know.**

(1) Principles of employment of obstacles.

(2) The purpose of obstacles in defence.

(3) The role of obstacles in the withdrawal.

(4) More about the impact obstacles can have in all phases of war.

b. **Understand.**

(1) Value of obstacles tactically.

(2) Need for minning policy and control.

(3) Terms associated with obstacles plan.

PRINCIPLES OF EMPLOYMENT

7. The principles of all types of obstacles are generally the same, these are:

a. **Coordination with Tactical Plan**. Obstacles are double-edged weapons and unless their sitting is coordinated with the tactical plan they may hinder own move.

b. **Covered by Observation and Fire.** An obstacle that can be crossed without interference ceases to have any tactical value. Minefields therefore must be observed by day and night and covered by effective fire.

c. **Employment of Artificial Obstacles in Conjunction with Natural Obstacles**. It will economize on engineer effort, resources

and time; it will also increase effectiveness.

d. **Employment in Depth**. It will tax enemy resources and it is more likely to achieve surprise and help break momentum of attack.

e. **Camouflage and Concealment**. Layout of an obstacle easily gives away the pattern of defences; therefore it should be adequately camouflaged and concealed.

DEFENCE

8. The defender will use obstacles for several purposes, this includes the following:

a. To prevent an attacker over-running his defended localities for long enough to:

(1) Give him time to develop the firepower of defensive weapons.

(2) Redeploy reserves to counter the developing threat.

b. To deter an attacker from by-passing or penetration between defended localities.

c. In conjunction with other defensive weapons, to inflict casualties to men and equipment.

d. To induce an advancing enemy to follow a pre-determined line by canalizing or deflecting his advancing forces.

9. Associated with these direct effects of obstacles are some indirect effects such as:

a. An attacker delayed on an obstacle will, by bunching and loss

of momentum present a better target for defensive weapons. It is therefore important that the obstacles plan is closely integrated with, for example, the anti-tank and artillery defensive fire plan.

b. An obstacle breached will still force the attacker to contract front and restrict his freedom of manoeuvre, which will benefit the defender.

10. If obstacles are to achieve these aims, they must be covered by direct fire weapons if possible, by observers calling for and controlling indirect fire at second best; or by surveillance and warning devices linked to direct and indirect fire agencies. An uncovered obstacle will develop only a very small part of its maximum potential. Those who work to breach the obstacle will be unmolested and the movement of enemy through the area will be undetected.

11. Effective as obstacles may be in reducing enemy's mobility it is important to realize that too many obstacles, particularly tactical minefields could reduce our own mobility and power of manoeuvre as well. Clearly, the advantage remains with the defender who should know where his minefields are, but the freedom to counter-attack and to manoeuvre reserve forces may be seriously hampered if this factor is not considered during planning.

WITHDRAWAL

12. Obstacles may have 3 distinct roles in the withdrawal:

a. They can assist defending forces to break clean on moving back to new main or intermediate defensive positions. Obstacles used to

defend the old positions may need reinforcing and gaps or lanes will have to be closed.

b. They can be used directly to assist a covering force to impose delay between positions so that main bodies can move back unmolested and given time to prepare the defence.

c. They can be used widely to inhibit all enemy forward movement.

13. There are, however, conflicting demands on what will inevitably be limited engineer resources. Effort put into delay between positions can only be at the expense of work on the positions themselves and random and probably uncovered obstacles must be carefully assessed for the delay they are likely to impose. This delay depends on:

a. Enemy cross-country mobility.

b. The going off-roads and the case with which isolated obstacles can be by-passed.

c. How far enemy tactical elements are prepared to out-run road bound support.

d. Enemy gap-crossing capabilities and clearance techniques.

e. The attrition caused to enemy engineers and their equipment.

14. Security also should be considered. An extensive obstacle plan prepared behind a defensive position is a clear pointer to an intending withdrawal. For this reason a commander may well delay the start of an obstacle plan until very shortly before he intends to pull back. This will seriously limit the extent to which delaying obstacles can be prepared.

15. The obstacle plan is further complicated by the need to keep rearward routes open for the withdrawing forces. Enemy forces following up may either by-pass opposition and seize defiles or reserved demolitions, or enemy helicopter or airborne forces may be introduced astride withdrawal routes. It is only prudent that alternative routes be kept open against such possibilities so that withdrawing routes can be easily diverted. It is the danger of being caught on the wrong side of an obstacle that has led to the concept of reserved demolitions protected by demolition guards. However, this takes manpower and defensive weapons, which can take little part in the main defensive battle or the preparations for it until all our own forces have crossed the obstacle. Therefore, reserved demolition must be kept to a minimum and there is strong case for relying on minor routes and cross-country movements as far as possible so as to deceive the enemy as to direction and routes of withdrawal. Furthermore, a commander with, for example, a major water obstacle at his back, would be well advised to retain a reserve of bridging equipment and engineers uncommitted but close to his intended crossing places. There may even be positive advantages in using bridging equipment to extricate his force instead of relying on civil bridges remaining intact and unthreatened. Certainly, by night the enemy might be hard put to it to locate crossing places in sufficient time to switch axes from the more obvious routes; all demolitions could then be treated as preliminary although steps would, of course, have to be taken to prevent bridging equipment falling intact into enemy hands.

16. A covering force must use the delaying effects of both natural and artificial obstacles if it is to avoid being over-run and be able to disengage to

new fire positions unmolested. The prime threat to a covering force will be by-passing by enemy leading tactical elements when mutual support between defended localities is likely to be difficult or impossible. Battle positions should be sited where improved natural obstacles inhibit by-passing. Control of any engineer work to support a covering force action should rest with the covering force commander, but they should ensure that any work carried out before withdrawal starts will not conflict with the higher commander's intentions. When contact has been made, the requirements will be for rapid mining and demolition, controlled at a relatively low level to help extricate elements of the covering force and to impose additional delay.

17. Where the use of obstacles to inhibit enemy forward movement is intended, more generally, there are 3 systematic approaches:

a. **Lateral Belts of Obstacles**. The aim of these should be to cut all routes through a zone extending across the enemy's line of advance, including any lateral which could be used to switch axes. This is also called a route denial band. Its limitations are obvious. Once the enemy has penetrated the band in one or two places, the rest of it is largely worthless. Furthermore, the increasing cross-country mobility of tactical and logistic elements may make the effort largely negative unless all going off-road are very poor either because of soft ground or steep slopes and trees.

b. **Demolitions along Major Axes**. The effect of this is likely to be cumulative rather than sudden and is more likely to affect logistic traffic than tactical elements as detours must be found or repairs made

before the route can be opened for wheels. How effective these techniques will be must depend on the number of subsidiary routes and detours available.

c. **Attacking Centres of Communication (Or Modal Point)**. This can be effective, but to make towns and villages impenetrable can absorb large number of engineers and much equipment for lengthy periods.

MINES AND MINEFIELDS

18. A mine is a type of bomb placed on or in the ground or water that detonates on contact or actuation. It is an encased explosive device. While a minefield is an area planted with explosive mines.

19. **Purpose of Minefields**. The purpose of a minefield is to delay, canalise and break up an enemy's advance. Its effectiveness in meeting this derives from the lethality it imposes or threatens to impose and depends also on the degree of attrition that the enemy considers acceptable.

20. **Anti-Tank Mines**. This type of mines is aimed at damaging armour beyond field repairs. They are unlikely to inflict damage that will put the vehicle out of battle for more than 48 hrs. They contain 2 to 5 Ibs of explosive and are actuated by a pressure of 70 250 Ibs. Their main characteristics are:

a. **Detection**. They are either metallic or non-metallic. The former are detectable and latter non-detectable.

b. **Shock Proof**. In order to protect against accidental detonation

by the blast of a nearby explosion, some type of mines are designed to explode only under sustained pressure. Another use is protection against breaching by flails and explosive method.

c. Water Tight. They can be laid under water and remain unaffected for quite a long time.

d. **Anti-Lift Devices**. These are used with anti-tank mines to prevent their lifting by enemy if an attempt is made after neutralizing the mine mechanism. A mine laid with anti-lift device cannot be retrieved and has to be destroyed in-situ.

21. **Effectiveness Against Tanks**. It should be realized that only a minute proportion of mines laid will actually cause casualties, in the same way that nearly all ammunition used fails to find its target. An estimate of the effectiveness of German mining in the WW II showed that 2,000 anti-tank mines were laid for every tank casualty caused. But this statistic, although an important basis for cost-effectiveness studies must be treated with caution because it is the effectiveness studies, must be treated with caution because it is the existence of the minefield and its potential to cause casualties, which is important in deflecting an enemy from his purpose.

22. **Anti-Personnel Mines**. These types of mines are used to incapacitate dismounted infantry. They use approximately one to two ounces of explosives. They are actuated by a weight of 20 to 50 Ibs. They do not cause many casualties but merely impede, demoralize and impose caution on advancing infantry. When laid integrated with anti-tank mines their main purpose is to make breaching of anti-tank mines difficult. They are usually of 2 types:

a. **Blast Type**. The effect of this mine is derived from shattering or blast effect of explosive and mainly aims at blowing a foot or portion of it. Mostly, these are non-metallic and therefore non-detectable. This is the most common type and comprises about 70% of the total anti personnel mines used in a minefield.

b. **Fragmentation**. The effect of this mine resembles that of a grenade. Damage is not only caused by the blast effect of the explosive, but also by sharpness effect of the splinters. As an actuation, a propelling charge makes it bounce up and it bursts at a height of 5 6 ft from the ground. A pressure of 8 to 30 Ibs on the mine or a pull of 3 to 10 Ibs on the trip wire attached to the mine will actuate it. The area of the damage is far more than the blast mine. These mines are detectable due to their metallic nature.

23. **Types of Minefields**. The following are the main types of minefields:

a. **Nuisance Minefield**. A minefield which is laid to delay, disorganize enemy and to hinder his use of an area or route.

b. **Phoney Minefield**. Used to simulate minefields, and so deceive the enemy. No live mines may be used in a phoney minefield.

c. **Defensive Minefield**. A minefield laid to block enemy attack formation in selected areas and to deflect his approach into selected battle areas or to prevent penetration between positions and to strengthen the defence of the positions themselves.

d. **Protective Minefield**. A minefield employed to assist a unit in its local close protection. These are laid by units; they are not an

Engineer responsibility.

24. **The Design of Minefields**. The following details are important in order to fully understand the concept of design of minefields:

a. The effectiveness of a minefield is defined in terms of its stopping power, which is in turn defined as the percentage chance of a vehicle attempting to cross a minefield being stopped.

b. The engineer can now present a commander with a series of options. The constraints on the obstacles plan will remain, as before, the number of mines available, the time available for laying them and the manpower and equipment available. However, whereas in the past there has been a tendency to accept a standard density of one mine per metre of front from almost all minefields, it is now possible to design them with a fair degree of precision for their purpose. There is a strong argument for increasing the stopping power of minefields close to main axes and diminishing it further out. Additional advantage of the system is that the stopping power of minefields which have been only partially laid can be assessed. If time is short, it may be prudent to lay one or 2 rows in a large number of fields rather than completing each minefield in turn. The options can be put before the commander.

c. Although there is apparently an advantage in laying a smaller number of high density rows (60% stopping power for 2 rows at 2.75 metres spacing as opposed to 52% for 6 rows at 8.25 metres spacing, both 727 mines per 1,000 metres), the resistance to breaching is very much dependent on the depth of the field. Current doctrine states that

a depth of between 300 and 400 metres is desirable so that a minimum of 3 or 4 rows of mines would be normal although this does not imply that those rows will be regularly spaced. Their sitting will depend on ground.

d. In sitting the rows of a minefield in detail, the following points should be noted:

(1) All rows should be covered by fire.

(2) Mines on slopes reversed to the enemy are more likely to achieve surprise.

(3) Minefield which contain within them natural obstacles (such as ditches and streams) are more likely to hold up breaching equipment.

(4) Rows which conform to hedgerows, trees, etc, are less likely to be seen than those in open ground.

(5) Surveillance over the obstacle must be maintained both by day and night or in mist and dust. Surveillance devices must therefore include defensive obstacles within their arcs. Standing patrols either inside or beyond the obstacle may well be necessary to give early warning of an attack.

25. **Safe Lanes and Manoeuvre Area**. These, at least in part, overcome the problems or restricted movement created by the minefields themselves, but at the same time, they create new problems. The following passage was culled from a Soviet article entitled 'Minefields and Manoeuvre'.

In operations deep in the defensive area, the solution of this problem (lanes through minefields) must be sought in the locality or gaps, unmined areas and routes and the exploitation

of lanes used by the defender when withdrawing. This can be achieved by the attacker if he does not allow the defender to disengage but passes through the lanes in the minefield without giving the defender the time and opportunity to close them.

Lanes and manoeuvre areas may well be required for withdrawing troops, for counter-attack and for patrolling, but they must never be obvious, and mines must be available at the lane or manoeuvre area so that they can be closed very quickly. The need for withdrawing force to achieve a clean break before passing through our own defences is thus underlined.

26. **Control Aspects of Mining**.

a. **Tactical Commander**. Mining policy must be laid down by the tactical commander and not by the engineer. This policy may often have to be decided at a very high level particularly where there are political implications or limitations. The tactical commander must:

(1) Decide the sitting of minefields and state the stopping power required as part of the tactical plan.

(2) Lay down the policy for fuzing anti-handling devices, antipersonnel mines and whether mines can be laid armed.

(3) States the policy for phoney minefields and for lanes and gaps.

(4) Allocate resources and manpower as advised by his engineer.

(5) Decide the policy for booby-trapping.

b. **Staff.** Staff will be responsible for:

(1) Maintaining minefield records and notifying both units

and higher HQ as to the state and positions of all minefields.

(2) Logistic aspects of the issue, carriage and delivery of mines to laying units.

(3) Ensuring that arrangements are made for closing lanes in minefields either by demolition guards or by withdrawing troops.

27. **The Laying of Minefields**. Mines can be laid by hand (buried or on the surface) or by machine (buried or on the surface). The following are some general considerations on the laying of minefields:

a. **Speed Versus Concealment**. Mechanical laying is much faster than laying by hand but it is generally limited to open country, with going firm enough to support both laying and towing vehicles. It lays mines at regular spacing so that the finding of one mine in a row will very quickly disclose all the others in that row. Careful hand-laying in most types of grounds will, after a few days weathering, leave no trace of disturbance. Although also laid to a regular pattern, there is no hint of row direction so that the finding of one mine does not necessarily disclose all the others.

b. **Deception**. If it is the commander's policy to prepare phoney minefields, the tell-table signature of the train can be used to good effect without using live material. However, for phoney minefields to be effective they must be marked as for live fields.

c. **Logistics**. Mechanical laying usually requires more logistics than any other form of laying. It is necessary to ensure a regular

supply of mines to the laying train at a rate of 2 or more truck loads per hour for up to 18 hours per day per layer, if they are to be kept working to capacity. This will involve not only vehicles but manpower to load vehicles at mine dumps.

d. **Marking**. All minefields except nuisance minefields must be marked. This is done either by a barbed-wire perimeter fence or by utilizing existing fences. In both cases, minefield signs must be shown. Marking is necessary to ensure our own troops do not run accidentally into our own minefields. It is therefore highly desirable that minefield perimeters should coincide with recognizable features such as hedgerows, roadsides, the edges of woods, streams etc, so that, particularly in the dark, vehicle commanders have a better chance of relating minefield, map and ground.

e. **Recording**. All minefields must be recorded in 2 ways. First, they must be marked on the largest scale of mapavailable, showing the perimeter of the field, the type of mines, the stopping power, the total number of mines laid and manoeuvre areas and lanes. This information must be passed by the 'G' Branch of the HQ responsible for laying the minefield to all who may need to know. Secondly, an exact record of every minefield must be completed by the laying unit and sent to the highest Engineer HQ. This is in order that mines may be subsequently lifted safely.

f. **Roads**. While the laying of mines in open country presents few technical problems, there are considerable difficulties in continuing

minefield rows across hard surfaces such as roads and tracks. Every road or track through a minefield must be created or rooted before mines can be laid in the resulting debris. Roads should be created at every point where they cross mine rows but if time is likely to be short cratering should begin at the forward edge of the field. Where roads are to be kept open for withdrawing forces, there will be a need for demolition and reserved demolition procedures in exactly the same way as with a bridge over a water obstacle.

g. **Buried Versus Surface Laying**. Field trials have shown that it is often extremely difficult to see mines laid on most natural surfaces when the observer is closed down in an armoured vehicle, it is also quite difficult when the vehicle is opened up. Even though surface laying is much faster, there may be circumstances when it is preferable to carry out buried laying. The disadvantage is that the enemy's hand breaching is obviously greatly simplified. In considering surface laying, there is a need for sensible treatment of mines as to colour, shape and texture so that they blend well with natural surfaces.

h. **Fuzing**. Every fuze is designed to fire a mine either on a singly triggering action (eg pressure) or on any one of several triggering actions. The greater the number of triggering actions to which a fuze will respond, the more effective the fuze, but also the more costly and complex. Currently, we are still using a generation of pressure mines where the weight of the target, either man or vehicle acts on a pressure plate and compresses a spring to actuate the fuze. This type of fuze

can be varied so that 2 separated pressures are required before detonation can occur. This defeats mine-roller clearance as the roller takes only the first pressure and the pusher vehicle the second. Other possibilities are:

(1) **Trip-Wire Actuation**. Positive (eg pulling or negative tie cutting) actions can trigger the fuze.

(2) **Tilt Fuze or Rod Fuze**. Tilt Fuze or Rod Fuze stands as short 'mast' on the mine which is fired as the mast is moved out of the vertical by (say) a tank glacis plate.

(3) **Liner Fuze**. In the case of Liner Fuze, the part sensitive to pressure is not a plate but a tube. It has the advantage of presenting a greater sensitive length to a track or wheel when laid at right angles to the expected attack.

(4) **Anti-Disturbance FUZE**. This type of fuze is based on the action of some kind of tumbler which triggers the mine when it is moved. A safety device must be incorporated so that the mine does not fire until some minutes after laying.

(5) **Influence Fuze**. Various types are feasible based on magnetic effects or on the interruption of infra-red beams to provide the triggering effect.

MINES AND LAYING EQUIPMENT

28. Some of the current types of mines and the existing laying equipment are discussed in the succeeding paragraphs.

a. **Mines**.

(1) **Anti-Tank Mark VII**. Anti-Tank Mark VII is a heavy, robust, circular mine of high explosive power. It is simple and relatively cheap. However, it is of difficult shape for mechanical laying and concealment as the furrow must be large. The fuze is stored separately from the mine so that in the laying process the fuze must be armed by hand and then placed in the mine. Being circular, much of the explosive effect tends; to be dissipated on detonation. It is easy to detect having high metallic content. The layer has the option of selecting single pressure, double pressure or tilt fuze.

(2) **The Bar Mine**. The Bar mine has a number of advantages over the Mk VII mine. It is easier to lay and conceal because it shape requires a far smaller furrow. It has an integral fuze which can be armed mechanically in the laying process. The shapes of the mines ensure that the explosive effect relative to a track is high for the weight of explosive used. It is relatively difficult to detect being non-metallic. Only about ½ of the weight of bar mines is needed to give a minefield the same stopping power compared with Mark VII mines.

(3) **Anti-Personnel Mines**. The anti-personnel mine No 6 is in service as well as anti-personnel mines No 7 (DINC; BAT) and ELSIE. Generally, anti-personnel mines produce their deterrent effect by threatening to maim rather than kill; a very small quantity (1 oz) of explosive will injure the foot

sufficiently to cause a casualty requiring evacuation from the battle field.

b. **Laying Equipment**.

(1) **The Ranger**. The Ranger enables anti-personnel mines to be laid in a fraction of the time previously required. Up to 72 disposable tubes are loaded into a discharger which can be mounted on any medium or heavy vehicle. Each tube contains 18 anti-personnel mines which are ejected by means of a cartridge. The mines disperse in flight and form a random pattern on the ground. It has the following applications:

(a) Covering rows of anti-tank mines as they are being laid.

(b) Covering an existing anti-tank minefield by firing anti-personnel mines from the outside of the field.

(c) Delaying the repair of demolitions.

(d) Rapid infesting of woods, road sides and tracks to impede and canalize enemy movement.

(e) Infesting the far bank of a river to impede enemy movement.

(f) Control of enemy infantry or light vehicle movement in open country or desert areas.

(2) **Bar Minelayer**. Bar Minelayer equipment is designed for use with the bar mine, it is light and simple. It is normally towed by an APC for buried laying but it can be towed by any

vehicle including a landrover, for surface laying. The layer incorporates an arming device. It can be operated by 2 men. The mines are carried in the towing vehicle. One thousand metres or 'heavy' minefield can be laid in less than one hour.

c. **Hand Mine Laying**. Notes on hand mine laying in a battalion area are at Annex A to this Chapter.

WIRE OBSTACLES

29. The purpose of wire obstacles is to break up infantry attacks in front of defended localities to prevent them being overrun, so that defensive weapons can be used to best effect. They must, in most cases, be constructed by the troops holding ground and not by engineers. Wire has its greatest effect if it can take the enemy by surprise. Concealment is therefore important and low wire entanglements may often have a greater disruptive effect than continuous cat wire fences. Wire should be sited beyond grenade throwing range. The control of wiring stored and their issue is staff responsibility; they will normally be handled by engineer resources.

INUNDATION OR DRAINING

30. Inundation is the flooding of land with water with a view to deny its use to the enemy. It is an effective method of creating an obstacle. Effectiveness of inundation depends on the quantity of water available, the type of soil, the duration of flooding and the level of the source of water in relation to the area to be inundated. The only water sources considered suitable for inundation are irrigation canals/channels.

31. An inundated area is as much as obstacle to friendly forces as it is to the enemy. Also, it requires considerable time to dry up even after the water supply is cut off. Therefore in order to ensure that an inundation does not adversely affect the plans of other formations, inundation schemes should be approved at the highest level and must conform to overall operational plan. The tactical and technical considerations for inundation are discussed below:

a. Tactical Considerations.

(1) **Covered by Fire/Observation**. Inundation will not stop a determined enemy. Like all other obstacles, inundation belt should also be covered by fire to engage the wondering infantry and the immobilized vehicles including amphibious. In case it is planned as a barrier, the belt should be wider and kept under observation. Also, if it is not covered by fire a task force should be earmarked to rush to the area at a short notice to deal with the enemy attempting to cross it.

(2) **Width**. The width of inundation is synonymous to the depth of an obstacle. The wider an inundated area, the more difficult it will be for the enemy to pass through it (1000m of tank access will take about 24 hours to lay). However, the width should be related to the availability of water. A belt 2000 yards long and 500 yards wide requires 100 cubic feet per second of water for over two days.

(3) **Sitting**. Where possible, the inundation belt should be sited along the water channels and should preferably be continuous. If thus sited, it will be economical in effort and

quick to execute because the ground naturally slopes away from the channel and the raised channel acts as a bound/dyke to contain the water.

(4) **Lanes**. Lanes for the passage of infantry and vehicles can be constructed by strengthening a dyke. Lanes should be sited to suit the tactical plan. Since it will be difficult to camouflage these lanes, adequate measures should be taken to deny their use to the enemy.

(5) **Security**. When an area is inundated, it cannot be concealed from the enemy. This major limitation should, therefore, be borne in mind during planning.

(6) **Coordination**. If more than one formation plans to draw water for inundations from the same canal, plans must be coordinated. If there is insufficient water for all the schemes (especially during dry season), priorities should be worked out jointly in advance.

(7) **Flooding**. In areas where the soil is unsuitable or is only partially suitable for inundation, flonding may be carried out. On an air photograph it will look like any other inundated area and will impose caution and reluctance on the enemy. However, the commander must know the limited effectiveness of flooding and be prepared to meet the threat if the bluff is called. In case of inundation 2 to 3 feet of soil is completely saturated with water and behaves like a bog, but in case of

flooding the soil is not fully saturated and it may not act as a bog. The obstacle value of flooding is only the depth of standing water.

a. **Technical Considerations**. Technical feasibility and successful execution of an inundation scheme is dependent upon the following factors:

(1) Level of area to be inundated vis-à-vis level of water in the source. The former must be sufficiently lower than the latter.

(2) Availability of water i.e discharge of irrigation channel/canal from where water is to be taken.

(3) Terrain relief, i.e undulating, broken etc.

(4) Soil characteristics.

(5) Time and engineer resources available for carrying out inundation.

WOODS AND BUILT-UP AREAS

32. Both woods and built-up areas can, with considered expenditure of engineer effort, be turned into effective obstacles especially if the resulting debris is liberally sown with mines and booby traps. It is difficult to give any sensible yardsticks, but an engineer section using section tools and explosives should be able to crater and block a forest ride with fallen timber in about 2 hours, but to make a wood into an effective obstacle will take much longer. A field troop might achieve 100m in 2 hours. To make towns and villages into obstacles, beyond the normal creating of roads will rely

upon the demolition of buildings across streets. This will only be effective if the buildings are tall and massive and the streets narrow. A section might then achieve one such blockade every 2 hours.

SUMMARY

33. An obstacle is defined as a hindrance which the defender may turn to an advantage. Obstacles can be natural, artificial or a combination of both. Obstacles have an impact in all phases of war and their effort (to delay or stop) the attacker should be emulative in 3 ways:

a. To induce extreme caution.

b. To use up engineer resources.

c. To separate assaulting echelons from their logistic support.

Annex:

A. Note on Hand Mine Laying.

TEST QUESTIONS

34. Answer the following questions based on this Chapter:

a. In what 3 ways should obstacles have a cumulative effect on an attacker?

b. What are the 4 purposes for which a defender may use obstacles?

c. What are the 3 roles an obstacle may have in a withdrawal?

d. What are the 3 systematic approaches to inhibiting enemy forward movement?

e. What is the purpose of a wire obstacle?

f. What points should be noted in detail when sitting rows of minefields?

g. How could obstacles be made effective?

h. What must a tactical commander do when laying down his mining policy?

i. What is the staff responsibility in relation to mines and minefields?

j. How should minefields be recorded?

CHAPTER 3

BREACHING ENEMY OBSTACLES

INTRODUCTION

1. The word '*breaching*' implies the threat of direct opposition. The term '*breaching operation*' is used to describe the opening of routes through a minefield against enemy opposition. A successful breaching operation may be an essential prerequisite to an attack. The term *'clearance operation'* is used to describe the opening of routes through a minefield when not against enemy opposition. It is possible that clearance operations may be conducted after an attack to open further routes through a breached minefield.

OBJECTIVES

2. By the completion of this Chapter officers should:

   a. **Know.**

      (1) The type of obstacle crossing in offensive operations.

      (2) What is involved in breaching:

         (a) Wire obstacles.

         (b) Minefields.

   b. **Understand.**

      (1) Importance of planning for the breaching of obstacles in the attack and the advance.

      (2) Importance of command and control in breaching

operations.

DEFINITIONS

3. **Obstacle**. Any obstruction that stops, delays or diverts movement.

4. **Barrier**. A coordinated series of obstacles employed to canalize, direct, restrict, delay or stop the movement of the opposing force and to impose additional losses in personnel, time and equipment on the opposing force. Barrier minefields are ordered by higher fmn and laid by engineers.

5. **Stopping Power of a Minefield**. This is the percentage chance of a vehicle which is attempting to cross a minefield being stopped. Minefields may be classified 'Heavy' (above 75%), 'Medium' (50 - 75%) or 'Light' (Blow 50%).

6. **Mine Cluster**. A single anti-tank mine or an anti-tank mine protected by a number of anti-personnel mines or a group of anti-personnel mines.

7. **Mine Row**. A single row of clusters laid in a generally straight line.

8. **Mine Strip**. Two parallel mine rows laid simultaneously 6 paces apart.

9. **Minefield Lane**. An un-mined (or de-mined) route through any minefield suitably marked. Lanes will normally be classified as 'Vehicle lane' (8 m wide) or 'Foot lane' (2 m wide).

10. **Minefield Gap**. This is an un-mined space within a minefield marked

and only known to own forces used for admin purposes e.g. for refitting, resting, harbour etc.

11. **Manoeuvre Area**. This is an area of minefield or otherobstacles, sufficiently wide to allow our forces, of at least company group size to manoeuvre or pass through in tactical formation.

12. **Minefield Record**. A complex, written record of all pertinent information concerning a minefield, submitted on a standard form (AF 4017A) by the officer in charge of laying operations.

TYPES OF OBSTACLE CROSSING

13. The following terms are used to describe the types of obstacle crossing in offensive operations:

a. **Opportunity or 'Bounce' Crossing**. The seizure of a bridge or minefield lane may be accomplished by advancing in unexpected direction or by the use of coup de main force introduced by helicopters.

b. **The Hasty Crossing**. In mobile operations when the enemy has not had sufficient time to organize the defence fully, the attacker must try to cross the obstacle at once. In order to take full advantage of such a situation, crossing equipment must be well forward behind the leading troops. Speedy reconnaissance and good engineer intelligence are prerequisite for the success of this type of crossing.

c. **The Deliberate Crossing**. If a hasty crossing fails or is not

possible, a deliberate crossing operation must be mounted. During the initial crossing, enemy positions and observation posts overlooking the crossing sites must be neutralized.

THE ATTACK

14. **Intelligence**. Breaching of enemy obstacles is probably the most dangerous situation for an attacker. To be caught on an unforeseen obstacle under enemy fire without the ability to penetrate that obstacle is to invite heavy casualties. Intelligence through reconnaissance (both ground and air) and thorough map study are therefore vital. Adequate intelligence will enable the attacker to group his force so that his elements are correctly deployed and he has plans to exploit rapidly the penetration of the obstacle. It is unlikely, except in the most strongly defended positions, that the enemy can cover the whole length and depth of an obstacle by fire or by observation. This is especially true of the actual water surface of a river or canal. A defender can seldom afford to disperse his force to the extent required to cover the whole channel.

15. **Deception**. The attacker has considerable freedom to choose his point of attack and, with this advantage and good control (especially traffic control); he may be able to open up enough routes through or over an obstacle before the defender can concentrate sufficient force to contain him. It is important, therefore, that the attacker attempts as many breaches or crossings as his resources will permit. Deception plays a significant part in breaching operations as in all other phases of war. The aim should be to deceive the enemy as to the main thrust for as long as possible to inhibit the

movement of his reserves. A careful balance is however required between the force allotted to deception (which must appear to pose a significant threat) and those allotted to the break-in (which must be overwhelming at the points of application). Should a subsidiary attack achieve unexpected success the attacker must be so balanced that he can switch his own reserves to exploit it. It follows that, given the importance placed on deception, the cover of darkness or extensive use of smoke may often be used to conceal from the defender the attacker's true intentions. Most deliberate break-in operations take place at night but as the defender is now likely to be assisted in his surveillance of the obstacle at night by radar and other night viewing aids, the attacker must consider their neutralization before launching his assault.

16. **Reserve**. The establishment of reserves of breaching or crossing equipment and the men to operate them are an important part of the tactical plan. The attacker must consider whether to deploy all available resources uncommitted or some combination of both. Much will depend on the reliability of equipment and the likelihood of damage or destruction of resources by enemy action.

17. **The Bridgehead**. With all break-in operations involving the crossing of an obstacle, one fact stands out above all others. The attacker will not succeed unless he is able to build up his defensive capability (particularly anti-armour and anti-aircraft defences) on the enemy's side of the obstacle sufficiently to withstand enemy counter-action. Only in exceptional circumstances and against ill-organized opposition could an attacker expect to go straight to the offensive on crossing an obstacle. There must be a

pause while a balanced force is collected on the far side of the obstacle before the offensive can be resumed in a breakout operation. The collection of this force takes time and needs space. The bridgehead must therefore be large enough to permit dispersal and should offer the commander a choice of points at which to launch the the break-out. However, the greater the area needed, the longer the perimeter which must be defended while the build-up is taking place. A commander must balance very carefully the length of this perimeter against the need to assemble a strong break-out force. This will usually be a complex equation to solve.

THE ADVANCE

18. Much that is true for the attack holds true for the advance. However, it is likely that any major natural obstacle encountered will be used by the defender as the basis for positional defence. Obstacles will therefore have to be by-passed or breached and this aspect has already been covered. A succession of minor delaying or nuisance obstacles, some or all of which may be covered by fire, is most likely to be encountered. The enemy's aim is likely to be to force us to deploy our leading elements prematurely. The means to counter such tactics are; first to be prepared to recce widely for subsidiary routes, by-passing the enemy delaying positions covering the obstacles and to exploit very rapidly those found clear (this demands balance and flexibility of grouping); secondly, to have engineers and resources as far forward as possible to reopen blocked routes where subsidiary routes prove unsuitable for echelons and logistic traffic. However, engineer manpower and equipment must be husbanded with engineers and equipment area available when no deviations are possible.

19. The effect of CVR (T) on our ability to get on in an advance must be speculative. Not only should it greatly improve the cross-country capability of reconnaissance forces, it may also have a significant effect on our ability to 'bounce' water obstacles.

MINEFIELD BREACHING

20. It must be remembered that there may be occasions when a defender will have to breach his own minefields. Although gaps and lanes will normally be left to retain the mobility of friendly forces, this may have to be improved by further breaching. It is essential, therefore, that minefields are accurately recorded in detail.

21. Minefields can be breached in 3 basic ways:

a. Manual/hand breaching.

b. Breaching by mechanical means.

c. Breaching by explosive charges.

22. In all cases of breaching, information about the obstacles is essential and much of it will have to be obtained by reconnaissance patrols before an assault can be launched. This information is in 2 parts.

a. **Tactical Information**.

(1) Extent of the obstacle belt including any existing lanes or gaps.

(2) Positions covering the obstacles including standing patrols, surveillance devices etc.

(3) Enemy defensive fire tasks.

(4) Approaches to and exits from the minefields.

b. **Technical Information.**

(1) Density, type of laying pattern of mines in the field including fuzing, anti-handling devices and the presence or absence of anti-personnel mines.

(2) Going within the minefield and whether there are ditches etc which may have to be negotiated.

(3) Approaches to and exits from the minefield in respect of work which may have to be done on them.

23. **Manual/Hand Breaching.** This method involves personnel moving into the minefields to detect, mark, neutralize and lift or pull mines to create safe lanes. Detection of mines is done by prodding the ground and locating deep buried metallic/plastic materials using electronic detector. Anti-personnel mines when located are usually neutralized and lifted, unless the enemy has used anti-lifting devices with them. Anti-tank mines are pulled out from a safe distance since anti-lift devices are likely to be used with them. Manual minefield breaching is slow, but a sure method for clearing safe lines for vehicles and troops moving on foot. This method is applicable both by day and night. The use of anti-mine shoes by the breaching parties has helped in reducing the breaching timings using manual method.

24. **Breaching by Mechanical Means**. Mechanical devices are attached to the front of tracked AFVs to either explode or remove the mines from the area immediately in front of the tracks. The more commonly used devices are as follows:

a. **Rollers**. The equipment consists of 2 independent roller sets. Each of the 3 to 6 rollers are mounted on arms in front of each tank track. As the tank pushes the rollers through the minefield, the weight of the rollers detonates the single-pulse, pressure- actuated mines in their paths. The force of the explosion cause the roller set to be lifted upwards on its suspension thereby reducing the force of the blast. Double action fuses and belly attack mines can however be used to defeat such breaching method. Excessively undulating ground will also impair the effectiveness of rollers as a mechanical means of minefield breaching. A combination roller system fitted in front of the tanks called ***"Troll Tank"*** may overcome the problems posed by undulating ground as well as double fused and belly attack mines.

b. **Ploughs**. Plough attachment mounted on the track digs out any mines buried in their paths and guides them outward, clear of the tracks. The effectiveness of mine ploughs will be reduced in close country where there are roots and boulders.

c. **Mine Sweepers**. These are breaching equipment designed to clear under water mines.

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a. **Use of Explosive Filled Hoses**. Explosive filled hoses such as Giant Viper and Baby Viper are trailer or skid mounted which are

propelled across the minefield by means of rockets which then detonates on landing thus creating foot and vehicular lanes. Examples include UK Giant Viper, Baby Viper, USA M.58 and M173.

b. **Use of Anchor and Cable**. An anchor and cable is launched across the minefield by means of a rocket. A winch or some other source of motive power is then used to draw the linear explosive charge towards the anchor across the minefield. The former USSR IBT - 2 is an example.

c. **Fuel Air Explosive**. In this method, a fuel aerosol cloud is created over the minefield about 2.5m above the ground by means of surface launched rockets or cluster bombs delivered by a helicopter or low flying air craft. The aerosol is then detonated to produce an overpressure which explodes single impulse mines. The double-impulse and long-impulse mines may not be neutralized using this method and it also has the disadvantage of warning the enemy of an impending assault on their positions.

PREPARATION

26. It is foolish to undertake breaching operation without thorough preparation and rehearsal. The need to conduct a breaching operation should not be improvised because if it is, it, may well fail.

BREACHING FORCE

27. **Task and Composition**.

a. The task of the breaching force is to open up more routes for the attacking force through the obstacle, and thereafter to keep them open.

b. It may be acceptable for breaching to be by hand, but it is more likely that a quicker method is required. If Giant Vipers and plough tanks are available, the breaching force on each route will consist of:

(1) Giant Vipers towed and operated by NAE.

(2) Armoured sub-units with one plough tank per tank troop.

(3) Infantry for local protection and for mopping up behind the assault force.

(4) Field and mechanized engineers.

(5) FOOs to control artillery fire support.

(6) A traffic control organization with good communications and recovery facilities.

28. **Command and Control.** All the components of the breaching force may be placed under command of a breaching force commander, who is likely to be a NAE officer. The assaulting infantry (as opposed to the protective infantry in the breaching force) will invariably remain under brigade or divisional command. The breaching force itself will also operate under brigade or divisional control.

a. **One Obstacle**. If one route through the obstacle is required, it will be normal to attempt 2 or more lanes close together. A breaching

force commander will be appointed for each route and lane commanders appointed for each lane. The system can be adapted to suit the circumstances.

b. **Obstacles in Depth**. Where there are several obstacles in depth, experience has shown that one breaching force commander should be given the task of making the lanes through all the obstacles on one route. This is preferable to giving to one commander the responsibility for the first obstacle, and to another the responsibility for all the lanes through the second obstacle, and so on, because with several limited lateral communications, at least in the initial stages, one breaching force commander would find it extremely difficult to control 2 or more routes through the same minefield simultaneously. Movement is essentially forward, and backward, along a single route and therefore it is more tactically and technically sound to have a commander controlling each route.

SUMMARY

33. An obstacle is defined as a hindrance which the defender may turn to an advantage. Obstacles can be natural, artificial or a combination of both. Obstacles have an impact in all phases of war and their effort (to delay or stop) the attacker should be emulative in 3 ways:

a. To induce extreme caution.

b. To use up engineer resources.

c. To separate assaulting echelons from their logistic support.

Annex:

A. Note on Hand Mine Laying.

TEST QUESTIONS

34. Answer the following questions based on this Chapter:

a. In what 3 ways should obstacles have a cumulative effect on an attacker?

b. What are the 4 purposes for which a defender may use obstacles?

c. What are the 3 roles an obstacle may have in a withdrawal?

d. What are the 3 systematic approaches to inhibiting enemy forward movement?

e. What is the purpose of a wire obstacle?

f. What points should be noted in detail when sitting rows of minefields?

g. How could obstacles be made effective?

h. What must a tactical commander do when laying down his mining policy?

i. What is the staff responsibility in relation to mines and minefields?

j. How should minefields be recorded?

36

a. **Opportunity or 'Bounce' Crossing**. The seizure of a bridge or minefield lane may be accomplished by advancing in unexpected direction or by the use of coup de main force introduced by helicopters.

b. **The Hasty Crossing**. In mobile operations when the enemy has not had sufficient time to organize the defence fully, the attacker must try to cross the obstacle at once. In order to take full advantage of such a situation, crossing equipment must be well forward behind the leading troops. Speedy reconnaissance and good engineer intelligence are prerequisite for the success of this type of crossing.

c. **The Deliberate Crossing**. If a hasty crossing fails or is not possible, a deliberate crossing operation must be mounted. During the initial crossing, enemy positions and observation posts overlooking the crossing sites must be neutralized.

THE ATTACK

14. **Intelligence**. Breaching of enemy obstacles is probably the most dangerous situation for an attacker. To be caught on an unforeseen obstacle under enemy fire without the ability to penetrate that obstacle is to invite heavy casualties. Intelligence through reconnaissance (both ground and air) and thorough map study are therefore vital. Adequate intelligence will enable the attacker to group his force so that his elements are correctly deployed and he has plans to exploit rapidly the penetration of the obstacle. It is unlikely, except in the most strongly defended positions, that the enemy

can cover the whole length and depth of an obstacle by fire or by observation. This is especially true of the actual water surface of a river or canal. A defender can seldom afford to disperse his force to the extent required to cover the whole channel.

15. **Deception**. The attacker has considerable freedom to choose his point of attack and, with this advantage and good control (especially traffic control); he may be able to open up enough routes through or over an obstacle before the defender can concentrate sufficient force to contain him. It is important, therefore, that the attacker attempts as force and to impose additional losses in personnel, time and equipment on the opposing force. Barrier minefields are ordered by higher fmn and laid by engineers.

5. **Stopping Power of a Minefield**. This is the percentage chance of a vehicle which is attempting to cross a minefield being stopped. Minefields may be classified 'Heavy' (above 75%), 'Medium' (50 - 75%) or 'Light' (Blow 50%).

6. **Mine Cluster**. A single anti-tank mine or an anti-tank mine protected by a number of anti-personnel mines or a group of anti-personnel mines.

7. **Mine Row**. A single row of clusters laid in a generally straight line.

8. **Mine Strip**. Two parallel mine rows laid simultaneously 6 paces apart.

9. **Minefield Lane**. An un-mined (or de-mined) route through any minefield suitably marked. Lanes will normally be classified as 'Vehicle lane' (8 m wide) or 'Foot lane' (2 m wide).

10. **Minefield Gap**. This is an un-mined space within a minefield marked and only known to own forces used for admin purposes e.g. for refitting, resting, harbour etc.

11. **Manoeuvre Area**. This is an area of minefield or otherobstacles, sufficiently wide to allow our forces, of at least company group size to manoeuvre or pass through in tactical formation.

12. **Minefield Record**. A complex, written record of all pertinent information concerning a minefield, submitted on a standard form (AF 4017A) by the officer in charge of laying operations.

TYPES OF OBSTACLE CROSSING

13. The following terms are used to describe the types of obstacle crossing in offensive operations:

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38

break-out. However, the greater the area needed, the longer the perimeter which must be defended while the build-up is taking place. A commander must balance very carefully the length of this perimeter against the need to assemble a strong break-out force. This will usually be a complex equation to solve.

THE ADVANCE

18. Much that is true for the attack holds true for the advance. However, it is likely that any major natural obstacle encountered will be used by the defender as the basis for positional defence. Obstacles will therefore have to be by-passed or breached and this aspect has already been covered. A succession of minor delaying or nuisance obstacles, some or all of which may be covered by fire, is most likely to be encountered. The enemy's aim is likely to be to force us to deploy our leading elements prematurely. The means to counter such tactics are; first to be prepared to recce widely for subsidiary routes, by-passing the enemy delaying positions covering the obstacles and to exploit very rapidly those found clear (this demands balance and flexibility of grouping); secondly, to have engineers and resources as far forward as possible to reopen blocked routes where subsidiary routes prove unsuitable for echelons and logistic traffic. However, engineer manpower and equipment must be husbanded with engineers and equipment area available when no deviations are possible.

19. The effect of CVR (T) on our ability to get on in an advance must be speculative. Not only should it greatly improve the cross-country capability of reconnaissance forces, it may also have a significant effect on our ability to 'bounce' water obstacles.

MINEFIELD BREACHING

20. It must be remembered that there may be occasions when a defender will have to breach his own minefields. Although gaps and lanes will

normally be left to retain the mobility of friendly forces, this may have to be improved by further breaching. It is essential, therefore, that minefields are accurately recorded in detail. Many breaches or crossings as his resources will permit. Deception plays a significant part in breaching operations as in all other phases of war. The aim should be to deceive the enemy as to the main thrust for as long as possible to inhibit the movement of his reserves. A careful balance is however required between the force allotted to deception (which must appear to pose a significant threat) and those allotted to the break-in (which must be overwhelming at the points of application). Should a subsidiary attack achieve unexpected success the attacker must be so balanced that he can switch his own reserves to exploit it. It follows that, given the importance placed on deception, the cover of darkness or extensive use of smoke may often be used to conceal from the defender the attacker's true intentions. Most deliberate break-in operations take place at night but as the defender is now likely to be assisted in his surveillance of the obstacle at night by radar and other night viewing aids, the attacker must consider their neutralization before launching his assault.

16. **Reserve**. The establishment of reserves of breaching or crossing equipment and the men to operate them are an important part of the tactical plan. The attacker must consider whether to deploy all available resources uncommitted or some combination of both. Much will depend on the reliability of equipment and the likelihood of damage or destruction of resources by enemy action.

17. **The Bridgehead**. With all break-in operations involving the crossing of an obstacle, one fact stands out above all others. The attacker will not

succeed unless he is able to build up his defensive capability (particularly anti-armour and anti-aircraft defences) on the enemy's side of the obstacle sufficiently to withstand enemy counter-action. Only in exceptional circumstances and against ill-organized opposition could an attacker expect to go straight to the offensive on crossing an obstacle. There must be a pause while a balanced force is collected on the far side of the obstacle before the offensive can be resumed in a breakout operation. The collection of this force takes time and needs space. The bridgehead must therefore be large enough to permit dispersal and should offer the commander a choice of points at which to launch the

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and troops moving on foot. This method is applicable both by day and night. The use of antimine shoes by the breaching parties has helped in reducing the breaching timings using manual method.

24. **Breaching by Mechanical Means**. Mechanical devices are attached to the front of tracked AFVs to either explode or remove the mines from the area immediately in front of the tracks. The more commonly used devices are as follows:

a. **Rollers**. The equipment consists of 2 independent roller sets. Each of the 3 to 6 rollers are mounted on arms in front of each tank track. As the tank pushes the rollers through the minefield, the

weight of the rollers detonates the single-pulse, pressure- actuated mines in their paths. The force of the explosion cause the roller set to be lifted upwards on its suspension thereby reducing the force of the blast. Double action fuses and belly attack mines can however be used to defeat such breaching method. Excessively undulating ground will also impair the effectiveness of rollers as a mechanical means of minefield breaching. A combination roller system fitted in front of the tanks called ***"Troll Tank"*** may overcome the problems posed by undulating ground as well as double fused and belly attack mines.

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c. **Mine Sweepers**. These are breaching equipment designed to clear under water mines.

25. **Breaching by Explosive Charge**. Linear demolition charges are laid or projected across the minefield and then exploded to detonate mines so as to clear 2 or 8m gaps for foot and vehicular lanes respectively. Some ways of placing explosive charges across minefields are as follows:

21. Minefields can be breached in 3 basic ways:

a. Manual/hand breaching.

b. Breaching by mechanical means.

c. Breaching by explosive charges.

22. In all cases of breaching, information about the obstacles is essential and much of it will have to be obtained by reconnaissance patrols before an assault can be launched. This information is in 2 parts.

a. **Tactical Information**.

(1) Extent of the obstacle belt including any existing lanes or gaps.

(2) Positions covering the obstacles including standing patrols, surveillance devices etc.

(3) Enemy defensive fire tasks.

(4) Approaches to and exits from the minefields.

b. **Technical Information.**

(1) Density, type of laying pattern of mines in the field including fuzing, anti-handling devices and the presence or absence of anti-personnel mines.

(2) Going within the minefield and whether there are ditches etc which may have to be negotiated.

(3) Approaches to and exits from the minefield in respect of work which may have to be done on them.

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safe lines for vehicles

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44

d. The fire plan for this phase of the operation should be designed to neutralize enemy OPs and positions which dominate or overlook the breaching area.

e. Tanks and APCs crossing the minefield travel with their tracks in the Giant Viper or plough furrows. The order in which they cross must be laid down in the plan taking account of the tactical situation likely to be encountered on the far side.

f. Engineers may be required to prove and mark the Giant Viper lanes. Initially, marking need only be with white tape on pickets placed at intervals, but as soon as the tactical situation allows, lanes should be marked correctly. An ARV should be positioned close-by, ready to move any vehicle breaking down in the lane.

BREACHING WIRE

32. Wire obstacles are normally sited in conjunction with mines close to enemy infantry positions and wire breaching may therefore have to take place at a most vulnerable stage of the infantry assault. Methods for breaching wire obstacles include the following:

a. **Cutting**. The use of wire cutters to cut a way through the obstacle is a very quiet but slow method of making a lane. It will normally have to be carried out under cover of darkness or smoke.

b. **Ladders**. Improvised folding ladders can be made up in the field, these can be carried up to the wire obstacle opened out and laid

across the wire. It may be necessary to cut high strands of wire to ensure that the ladder lies down as firmly as possible. Troops then double across the ladder to continue the assault.

c. **Mats**. Chicken wire netting, canvas rolls or similarly made up mats can be laid along the top of a wired obstacle and run over by the assaulting troops. The mat should be about 1.5m wide and about 1 ½ times the depth of the wire obstacle. High wire may have to be cut to ensure that the mat beds down to give a reasonably firm foothold.

29. **Communications**. Good communications, which should be duplicated, are essential in any breaching operation. They must enable the commander to know the exact progress of the breaching of each lane so that he can order battle groups to assault, or make any necessary adjustments to his plan with the minimum delay.

30. **Traffic Control**. A good traffic control organization is required to control movement through the minefield. Vehicles passing through the lanes are vulnerable to enemy fire; their movement must be regulated to ensure that there is no bunching and that they disperse rapidly once through the minefield. The organization must also ensure that vehicles are ordered to move through the lanes as soon as they are open.

31. **Execution.** The following should be borne in mind when executing a mine breaching operation:

a. If hand breaching method is to be used, the assaulting infantry must go through the minefield first to establish a bridgehead on the far side which can cover the work of the breaching parties. Paths through

the minefield may be made, existing lanes may be used. On certain occasions it may be necessary for infantry to double through an uncleared minefield.

b. If Giant Vipers are to be used and the minefield is sufficiently narrow, i.e. less than 150m deep, the assaulting troops, armour and infantry may wait on the home side of the minefield until the Giant Viper has been detonated. The Infantry can then pass through on foot or in APCs in support of plough tank-led columns.

c. If the minefield is over 150m deep however, it may be necessary to fire 2 or more Giant Vipers consecutively to breach the minefield. In this case it will almost certainly be necessary for assaulting infantry on foot to move through the minefield or be air lifted over it to seize those features or positions from which the enemy can bring direct or observed indirect fire to bear on the breaching area.

d. The fire plan for this phase of the operation should be designed to neutralize enemy OPs and positions which dominate or overlook the breaching area.

e. Tanks and APCs crossing the minefield travel with their tracks in the Giant Viper or plough furrows. The order in which they cross must be laid down in the plan taking account of the tactical situation likely to be encountered on the far side.

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d. **Lying-On.** If the wire is not very thick, the first man up to it can lie on the top spreading himself out in an attempt to flatten the wire. The men who are following run over him, using his body in the

same way as a ladder.

e. **Bangalore Torpedoes**. These come in sets of 4 lengths, each of 2m; they can be joined together and pushed through the wire. They are fired from a safe distance of 25m behind the wire. They are fired 3 to 4m through the wire. Improvised bangalore torpedoes can be made up using pipes or angle iron pickers filled with explosive and having an initiation set.

f. **Direct Fire**. Sustained and accurate fire from artillery, mortars will breach or destroy most artificial obstacles, including wire. It is expensive in ammunition and time consuming, added to the fact that the resultant craters may make the going worse. It is possible to create a gap by firing HESH from a tank or anti-tank gun. However this requires a considerable expenditure of ammunition.

g. **Driving Over**. Tracked vehicles can be used to drive over wire obstacles. If the wire is low, then front of the tracks ride over it and squash it flat. If the wire is high, the wire will be pushed along in front of the vehicle until it breaks. Any loose wire, or coils which come in contact with the tracks may be drawn up and jam the idlers or the driving sprockets. This can immobilize the vehicles and clearance by cutting away the wire will be necessary.

SUMMARY

33. Obstacle breaching operations require detailed reconnaissance, careful preparation, meticulous planning and tight control; good communications

are essential. The breaching force must be well trained and rehearsed in its duties. Once lanes have been opened, F and A echelon vehicles must be passed through rapidly by the traffic control organization set up for that operation; this organization must be capable of switching serials between lanes or in order of priority as the need arises.

TEST QUESTIONS

34. Write the answers to the following questions based on this Chapter:

    a. What are the 3 terms needed for the types of obstacle crossing in offensive operations?

    b. What fact stands out above all others with all break-in operations involving the crossing of an obstacle?

    c. What are the seven methods of breaching wire?

    d. What are the 3 basic ways of breaching a minefield?

    e. What are the dimensions of the lane cleared by a Giant Viper?

    f. What is a tactical minefield?

    g. What is manoeuvre area?

    h. What is a minefield lane?

    i. What is a protective minefield?

    j. What is the task of a breaching force?

CHAPTER 4

RIVER AND GAP CROSSING

INTRODUCTION

1. This Chapter should be studied in conjunction with Chapters 2 and 3. The first part of the Chapter deals with obstacles too deep to ford and too wide to bridge with fixed span on assault bridges. Assault and dry bridging are considered later.

OBJECTIVES

2. Officers on completion of this Chapter will cover the spectrum of obstacles and will:

a. **Know.**

(1) Phases of a crossing operation.

(2) Possible variations in crossing operations.

(3) Characteristics of Engr with crossing obstacles before planning a crossing operation.

b. **Understand.**

(1) The command and control of obstacle crossing.

(2) The importance of careful assessment of obstacles before planning a crossing operation.

PHASES OF RIVER CROSSING

3. A crossing operation should include the following phases:

a. **Reconnaissance**. To plan the river crossing, a commander will

require:

(1) **Combat Intelligence**. Combat Intelligence is an understanding of the way in which the enemy can affect the operation. This he will gain from the combat intelligence provided in the normal way by his intelligence staff.

(2) **Engineer Intelligence**. Information on the crossing site and bank conditions can be obtained by reconnaissance from boats or amphibians. Where units are in contact with the enemy, surface swimmers and shallow water divers can be used. The equipment which they require for their task include gap measuring devices, clinometres for measuring bank slopes, instruments for measuring the depth and current of the river and for examining the river bottom. The location of enemy mines laid either on the banks or in the water, should be one of the important questions to be answered by the technical reconnaissance. Alternative sites for both swimming and fording crossing should always be reconnoitred.

b. **Assault**. An infantry assault in boats, probably at night, to establish a bridgehead of sufficient size to allow bridging, rafting, swimming or fording to take place.

c. **Build Up**. This may include:

(1) Swimming of amphibious vehicles.

(2) Opening of bridges or rafts to pass tanks and other vehicles into the bridgehead. Current river crossing equipment is shown at Annex A.

d. **Consolidation**. This includes the establishment of a coherent bridgehead defence against counter attack and the expansion of the bridgehead into a firm base from which to break out.

e. **The Break Out.** The technical problems associated with the crossing of large water obstacles are:

(1) Getting men across (the Assault Phase).

(2) Getting swimming vehicles across (Amphibious Follow-up).

(3) Getting non-swimming vehicles across (Assisted Follow-up).

ASSAULT PHASE

4. This task will fall primarily on the infantry. Planning will have to take account of the following:

a. The allocation and security of assembly area and boat off loading points. The latter should be as far forward as possible, ideally in the FUP.

b. The carrying or towing of boats to the river.

c. The importance of allowing time in the planning for these detailed infantry tasks, especially if the operation is at night.

5. The infantry will be supported by direct and indirect fire from the home bank provided by other infantry units, armour and artillery. An initial assault by infantry in APCs is tactically difficult as it is unlikely that the

APCs will be able to exit in any semblance of a tactical formation. In all but a complete unopposed crossing therefore the first waves of assaulting infantry must be ferried over the river in assault boats, using either paddles for a silent crossing or outboard motors. The ferrying must be done by soldiers not committed to the assault just like a number of other tasks for the operations. A bank group is formed for these purposes.

AMPHIBIOUS FOLLOW-UP

6. It is likely that some of the follow up echelon will cross the river by swimming their vehicles.

ASSISTED FOLLOW-UP

7. This section concerns resources not normally under battalion command. In order to avoid delay on reaching a water obstacle, commanders and staff must plan ahead to ensure that bridging is grouped with appropriate formations and units, resources of men and material are available when required and suitable harbour areas and routes are allocated for engineer units and equipment.

8. The bridge and rafting sites should be within the bridgehead seized by the initial assault so that work can start on them as soon as possible. Ideally, construction should start at night to achieve a measure of protection. The selection of the site for crossing should be such that the chances of its discovery by the enemy are reduced to the minimum.

ENGINEER ASSISTANCE

9. There will be a considerable demand for engineer assistance in a crossing apart from the work involved in the construction and operation of bridges and rafts. The requirement is likely to fall under 4 headings:

a. **Reconnaissance**. Parties using boats, surface swimmers or shallow water divers can cover the water gap and conventional reconnaissance parties the home and far banks.

b. **Improvements to Crossing Sites**. This can be:

(1) Work on the approaches to improve the going.

(2) Alteration in the bank profile to ease the problems of entry and exiting.

(3) The clearing of mines on the banks and underwater.

(4) Removal of underwater obstructions.

(5) Laying of track ways on the banks and underwater.

(6) Improvements to the going.

c. **Assistance to Exiting Vehicles**. This assistance can be by winching from pathfinder vehicles or from another vehicle that has already exited. Ground anchors can be placed on the far bank by troops, or by rocket, and then used by vehicles to winch themselves out. Fixed lines can be used to improve the rate of ferrying and to ensure exiting at the same place, where track way may be laid down.

c. **Assistance to Vehicles in Difficulty**. This assistance includes recovery of vehicles that may have drowned, broken down or drifted away out of control.

COMMAND AND CONTROL

10. **General**. The movement of bridging equipment, troops, tanks and vehicles through assembly areas, over the river, and their dispersal on the far side must be strictly controlled. The control headquarters must make the best use of the resources available and provide a flexible organization able to react quickly to any changes in the tactical situation and the means of crossing.

11. **Basic Requirement for Control**. These include:

a. **Clear Orders**. These should state:

(1) Who authorizes the engineers to start work on the construction of bridges and rafts.

(2) Who authorizes the start of the amphibious crossing and site preparations.

(3) The level at which the use of boats, rafts and bridges is to be controlled in each phase of the crossing.

(4) Who controls the traffic to and over the various crossing sites.

b. **Bank Group Organization**.

(1) This is normally provided by a company from a battalion not committed to the assault. The tasks of the bank group are:

(a) Clearance of the home bank, if this has not been done already and security of the FUP.

(b) Organization of the Boat Off-loading Point, where the assault boats are taken off their transport. This should be as far forward as possible.

(c) Control of the movement forward of the assaulting infantry.

(d) Manning the assault boats and ferrying, in particular returning empty boats to the home bank for succeeding waves.

(e) Construction in conjunction with assault pioneers of infantry rafts, if these are to be used.

(f) Providing fire support from the home bank.

(2) Tank battalion and recce battalions may also be able to provide the following assistance:

(a) Traffic control using their excellent communications.

(b) Surveillance of the far bank.

(c) Elimination of enemy direct fire weapons immediately before or during the assault.

(d) Destruction of enemy on the approach routes to the site and on the objective.

(e) Where suitable viewpoints exist ATGW may be of particular value in providing anti-tank defence of the bridgehead. Their longer ranges may enable them to engage targets on the enemy approach routes beyond the tanks.

(3) In a swim or ford crossing the battalion carrying out the operation provides:

(a) **A Crossing Controller**. A Crossing Controller is

likely to be the battalion 2IC, who is placed well forward near the obstacle to control not only the calling forward of vehicles in their correct order by also actual crossing. He must ensure that each crossing is used to its maximum capacity. As each company group comes forward it provides a LO to the crossing controller as an additional check.

(b) **An Entry Bankmaster**. An Entry Bankmaster directs the entry of each amphibian into the water in the sequence laid down. He will normally require the assistance of guides and be in communication with the Crossing Controller.

(c) **An Exit Bankmaster**. An Exit Bankmaster is assisted by guides and supervises the exiting of the amphibians. He also coordinates the recovery and dispersion from the exit sites. He must cross the river by assault boat or in the leading vehicle and have communications to the Crossing Controller.

(d) **Traffic Control**. A comprehensive traffic control organization must be set up by the senior headquarters controlling the crossing. Depending on the level of operation, this may be based on elements of a reconnaissance regiment, provost and unit reconnaissance troops or platoons. Traffic control

headquarters should be set up alongside the operations cell. This organization is required to enable serials to be switched between crossing sites and to prevent bunching at the crossing site and on the routes to them. Control is based on a series of traffic posts and waiting areas, with signed lateral and forward routes. The traffic organization requires its own communication, recovery facilities deployed along the routes and medical support at crossing sites. At bridging and rafting sites, close liaison must be maintained with engineer commanders to report on progress and delays. The control organization must ensure that vehicles are available at crossing sites as soon as the bridge or rafts are ready. This may mean ensuring alternative crossing places are available and amphibious bridging and ferries are switched between sites to avoid enemy interference, if this is not done the traffic control problem will be aggravated. If this switching is to be a timed programme, the traffic plan and vehicle priority tables can be written to allow for it. Additional waiting areas may be needed close to the river to ensure that the bridge or raft is never kept waiting for crossing vehicles.

VEHICLE PRIORITY TABLES

12. Crossing formations and units must prepare Vehicle Priority Tables. The following must be borne in mind:

a. Every formation and unit involved in the early stages of the crossing must prepare a detailed vehicle priority table, arranged in the load classes of the ferries and bridges to be built. Similar tables will be necessary when considerable numbers of amphibious vehicles are compelled to use a limited number of crossing sites. The aim is to ensure that transport requirements are significantly reduced. Nevertheless, work is bound to take an hour or more and cannot take place under fire without excessive casualties. There is therefore a need for a bridgehead to be formed and for far bank clearance exactly as for a river crossing. Both the staff and the traffic control organization can refer to it and avoid confusion.

b. In the initial stages, there is normally a restriction on the number of vehicles, which units may take into the bridgehead. This is due to the restricted space, the limited capacity of the ferries and bridges and the need to deceive the enemy as to the size of the build-up. However, units must always work out a priority table for all their vehicles, so that when more are allowed into the bridgehead there is no confusion.

POSSIBLE VARIATIONS

13. The crossing of water obstacles may not always be as part of an advance or assault. A withdrawing force may be required to use river or gap crossing equipment to extricate itself in the face of the enemy. The technical problems do not change, but staff work and organization must be particularly good so that full advantage is taken of the inherent flexibility of

the equipment. In particular, the following points must be covered:

a. Routes to and away from the sites must be reconnoitred, signed and promulgated. Waiting areas must be established. Traffic control must be organized.

b. Troops must be allocated to protect the bridge during construction and until the crossing has been completed.

c. Emergency demolition or denial of the equipment must be considered and the normal AFW 4012B and C procedures implemented. (i.e. Reserved Demolitions).

d. Liaison Officers will be required at the bridge sites to ensure the smooth passage of units to the rear.

e. Air defence may have to be established very quickly.

f. Recovery vehicles will be required to clear the site of any vehicle casualties.

GAP CROSSING

14. In an undulating terrain, gaps features, especially in sizes may vary. The fact that a gap is small does not necessarily mean it is easily fordable. Crossing can even be more difficult especially where gaps with steep banks and fast current are encountered. Similarly, although the act of bridging a gap may be simpler, the enemy threats to the crossing operation as a whole could pose more dangers. Therefore, the planning and organization discussed earlier in this module will often have to be fully carried out. The bridges and rafts are still bottlenecks restricting the building on the far side of the obstacles.

15. Small rivers are often fast-flowing with steep sides. This combination will usually prohibit swimming except occasionally on fixed-line and with prepared exits. Canals also frequently have sides which are too steep for APC to climb.

16. In these circumstances, the attacker is forced to use fixed bridging on expedients such as the following:

a. **Fixed Bridging**. Construction times for the Medium Girder Bridge (MGB) (up to Class 60) and the Airportable Bridge (APB) (up to Class 16) are short and the manpower and transport requirements are very significantly reduced. Nevertheless, work is bound to take an hour or more and cannot take place under fire without excessive casualties. There is therefore the need for a bridgehead to be formed and for far-bank clearance exactly as for a river crossing.

b. **Assault Bridging**. The deployment of tank-mounted bridges must be covered by the fire of other tanks, and possibly, by smoke when in the face of the enemy.

c. **Expedients**. These include fascines (either single or paired), hardcore and the use of tank dozer blades. If water is flowing in a gap, care must be taken not to block the stream by such expedients or flooding will occur.

SUMMARY

17. Given the right conditions, the combination of amphibious vehicles and bridges enables a river crossing to be made far faster and with greater

choice of crossing sites than ever before. In particular, the attacker has now to rely less on tracks and roads leading to the river. On the other hand, tanks and heavy vehicles will still have to cross deep rivers by bridges or ferries. A river crossing operation requires careful preparation and planning, detailed reconnaissance, good control, a rapid build up and bridgehead large enough to contain the necessary troops to repel any counter attack.

Annex:

A. Details of River Crossing Equipment.

TEST QUESTIONS

18. Answer the following questions based on this Chapter:

    a. What are the 5 phases of a crossing operation?

    b. What are the tactical problems associated with the crossing of a large water obstacle?

    c. What will you take into account when planning the assault phase of a river crossing?

    d. Requirement for engineer assistance is likely to fall under four headings; what are they?

    e. What is Bank Group Organization?

    f. Who is an Entry Bankmaster?

    g. Who is an Exit Bankmaster?

    h. What are the purposes of a MGB?

    i. What is an infantry assault boat raft and what can it carry?

    j. What are the forms of improvements to a crossing site?

CHAPTER 5

APPRECIATION

INTRODUCTION

1. The term appreciation simply covers an orderly sequence of reasoning leading in a logical way to the best solution of a problem. Appreciations are made instinctively in everyday life whenever a new situation has to be overcome; otherwise a previously successful course is followed. A mental appreciation can be given orally or committed to writing.

2. In the service we reduce everyday activities to drill to ensure precision under all conditions. Appreciations which deal with tactical, strategical, administrative or other problems always follow the following logical sequence:

a. The aim to be achieved.

b. The factors which affect the achievement of the aim.

c. The courses open for the achievement of the aim.

d. The plan which shows in outline how the aim is to be achieved and consists of:

(1) Statement of the MISSION.

(2) Main details of EXECUTION.

OBJECTIVES

3. Officers, having worked through this Chapter should be:

a. Thoroughly versed in the manner a service mind is expected to

reduce any situation to a sequence which identifies what has to be done and how a necessary objective is to be achieved.

b. Confidence with the knowledge that, provided he bears in mind the principles of war and those for the particular phase of war concerned, he within the frame work proposed will be able to produce a competent operational/tactical appreciation.

c. Aware that an appreciation, whether written or verbal, is a tool which with care can both help to clarify a problem and assist in its solution.

DEFINITION

4. An appreciation, which can be mental, oral or written, is a logical sequence of reasoning leading to the best solution to an operational, administrative or even personal problems.

NATURE OF AN APPRECIATION

5. Every problem derives from a 'situation'. Its solution involves an examination of the situation and usually requires the selection of a course of action.

6. The appreciation begins with an examination of the situation. The next step is to decide upon the specific result required; the aim. From this basis it is possible to start a process of reasoning that leads logically to a course of action. In short, an appreciation is a procedure for deciding what has to be done and how to do it.

7. The military appreciation is a disciplined thought process designed to examine all relevant factors and produce the best reasoned solution. It can be used if there is often only one answer, and more complex service problems, particularly in war, to which there may be no set or single answer.

PURPOSE OF A WRITTEN APPRECIATION

8. There are 2 occasions when an appreciation will be more effective if written:

a. To clear the author's own mind and to ensure that no relevant factors have been overlooked and that the recommended course of action is the best in the circumstances.

b. To present a clear picture of the situation to higher authority, with the recommended course fully supported by valid and logical reasoning. A written appreciation provides a record of the reasons for adopting a particular course of action.

ESSENTIAL INGREDIENTS OF AN APPRECIATION

9. The essence of an appreciation is a sequence of clear thought, critical examination and logical reasoning. The tasks must be approached with an open, unprejudiced mind. This is more difficult than it sounds when the problems seem familiar or the solution appears obvious. Prejudgment can cause logic to be ignored in a search for arguments that fit the solution already chosen. This hazard is known colloquially as 'situating the appreciation' and it claims victims regularly.

10. The need for accuracy, clarity, logic and relevance in the written appreciation is as important as in any other form of service writing. The composition and style of a formal appreciation should follow service writing conventions for operational writing. An appreciation written in an emergency or under trying operational conditions would be at best a shortened version and probably in note form. A written appreciation must, however, always be concise and complete, leaving the reader in no doubt of the aim and the reasons for the recommended course of action.

METHOD OF APPRECIATION

11. It is broken down into component parts so that each may be examined in detail. There are 5 distinct steps in writing a full formal appreciation:

a. The first 2 steps analyze what must be done by:

(1) Studying the existing situation.

(2) Specifying the aim to be attained.

b. The next 3 steps choose how the aim should be attained by:

(1) Examining and reasoning out all relevant factors.

(2) Considering all practicable courses.

(3) Deciding on the best course of action to attain the aim.

12. This sequence prevents the writer from jumping at a solution without considering all the factors logically. The sequence is also essential in preparing and training the mind in the process necessary for making shortened and mental appreciations.

THE FORM OF THE APPRECIATION

13. An example of the framework of an appreciation with explanatory notes is at Annex A to this Chapter. One point must be borne in mind by the reader though, the layout of the full appreciation may appear too formal and the contents of each section may seem to be laid down deliberately designed for use in the most complicated situations where the mind must be directed along a continuous, comprehensive and logical channel if the best solution must be reached. In any situation it is a good layout to follow. In more simple problems it can be abridged. In each case the layout must be adjusted to meet the writer's needs.

REVIEW OF THE SITUATION

14. The review of the situation may be given as an introduction to an appreciation to give essential background facts of the situation, but it is not part of the argument. It is normally omitted at divisional level and below.

AIM

15. The aim is the crux of the appreciation. Unless the aim is right, the whole appreciation may be worthless. The aim must be positive, clear and concise. Several things may need to be done at the same time, but there must never be more than one aim. When considering what the aim should be, the principles of war should be borne in mind. There are 5 easy tests to apply to an aim:

a. Will my aim secure a result in our favour?

b. Does the wording express what I want?

c. Is it in accordance with my instructions and responsibilities?

d. Is it reasonably possible?

e. Is it the utmost I can do?

16. The aim must be kept in mind throughout the writing of every subsequent paragraph of the appreciation, and all reasoning must be related to its attainment. The aim should not be qualified by limitations except those imposed by a superior commander.

17. The aim of an appreciation is expressed in the infinitive, beginning with the word 'to'. The verb used must be carefully chosen because it is the keyword.

FACTORS

18. The section on factors is the beginning of the main argument. It consists of facts, opinions of reasonable assumptions and conclusions deduced from them. All the available relevant information must be weighed critically, not only in relation to ourselves but also in relation to the enemy.

19. A factor may be described as a circumstance, fact or influence contributing to a result, and stems from the information available to the writer. The following is a list of factors that may be discussed in an appreciation:

a. Ground.

b. Own Forces.

c. En.

d. Time and Space.

e. Assessment of Tasks.

f. Courses.

20. Each factor must be discussed in relation to the aim and should lead logically to one or more deductions bearing on the attainment of the aim. A good test of the deduction is to ask, 'so what'? If the answer is 'so nothing', the factor should be discarded.

21. Each factor must be examined exhaustively and impartially. It is not enough to draw one deduction and assume that the factor has then been dealt with adequately. The deduction itself must be examined to see if it will in turn yield a further deduction and so on. Failure to do this may result in false deductions. The 'so what?' test should again be applied after each deduction. If the answer is negative, that particular line of argument is exhausted.

22. Ideally, the various factors should be arranged in a logical order starting with the most important factor so that the discussion of one factor leads naturally to the discussion of the next. There will be situations where it will be difficult at first sight to establish the priority of factors, but good planning will help to solve the problem. The smooth flow of argument must not be obscured by a mass of details e.g. performance figure; such details should be placed in annexes which must be referred to in the body of the appreciation. The deduction must, however, appear in the body of the appreciation.

23. As with all service papers, the preparation of a framework is an essential step in order to sort out factor headings in order of importance and to fit the available information under the headings selected. It may be approached by first setting down both the questions the appreciation is designed to answer and the form the answer should take. For example, the questions to be asked for an attack might be:

a. What must I seize and in what strength?

b. How do I get there and when?

c. Can I achieve surprise?

24. The answer to the first question only, must in the outline plan, appear in the form:

a. Allocation of troops to objectives.

b. Grouping.

c. Phases.

d. Boundaries.

25. They will be deduced from factors and, in this case, the following would appear to embrace all the facts we should consider in respect of the first question:

a. Enemy (strength, dispositions, likely tactics and equipment).

b. Ground.

c. Assessment of tasks.

d. Relative strength.

26. Consideration of factors under what might be termed the 'standard' headings may prove surprisingly unproductive and may be left at the end of

the section on factors with the feeling that more ought to be said without knowing quite how to say it. In this case, it may prove more productive to link factors together into larger groupings in much the same way as 'time' and 'space' are linked. 'Ground' and 'Meteorology' or 'Ground' and 'Enemy' may, for example, produce single important deductions when grouped. If this proves impracticable, the section 'Conclusions' is where deductions drawn from separate factors should be linked to give more useful and clear-cut guides to actions.

27. **Ground**. This factor must be sub-divided or it becomes unwieldy. In most tactical appreciations, the logical sequence is:

a. Vital Ground or Ground of Tactical Importance (whichever is appropriate).

b. Approaches to that Ground.

c. Features commanding those approaches.

d. Obstacles.

28. In considering the 'ground' in a written appreciation it is always necessary to develop a kind of shorthand if these factors are not to become a cumbersome and unintelligible muddle of grid references. It is strongly recommended that a map is attached to the appreciation on which all significant features and obstacles are given letter codes. Approaches should be shown by arrows and, perhaps, numbered. An example is shown at Annex C and it becomes a relatively simple matter to write, for example: "Approach 2 is dominated by Spurs P and L and is made difficult for en by Wood M and Village S". The same could also be used to show as much as possible of the details of the outline plan and should be mounted so that it

can be folded out and studied at the same time as the appreciation.

29. **Enemy**. The enemy must be considered from a number of points of view and in consequence the word 'enemy' will appear in several places in an appreciation:

a. Enemy forces must be considered in relation to our own in "Relative Strengths" which is often handled in a tabular form and can, if complicated, be made an annex.

b. Consideration of enemy's equipment and tactics may also yield worthwhile deductions. For example his scale of night fighting equipment could be a factor in deciding whether to attack by day or night.

c. Likely enemy action and reactions must also be considered as factors in 'Enemy' as they may well provide the answer as to what sort of operation is going to be conducted. However, this does not absolve the writer from stating the enemy course formally at the appropriate place.

30. **Assessment of Tasks**. This factor often causes confusion but it must form an essential link in the argument. It must not be confused with the allocation of troops to tasks. It is wrong to say "these are the things I have to do and these are the people who will do them". In an attack appreciation, it would be necessary to list the force required for each objective, for flank screens or guards, and the reserves required.

31. **Deduction**. Assuming that securing the SL is not part of the attack, I must have 2 phases if I am to keep a reserve throughout.

32. In defence, the assessment will be based primarily on the number of units/sub-units required to hold particular features. Whereas in the attack it will probably suffice to think ’one down’ in defence it will be normal to think ’2 down’ and for a brigade commander, for example, to total his foreseeable commitments in terms of company defensive tasks.

33. **Deduction**. With my force, I can either hold A, B and C as mutually sp posns and L, M and P or I can hold reverse slope posn X, O, D, Y and G but not both. If I am to maintain adequate res for counter-penetration and def against en heliborne ops, I cannot afford to allocate more than one armd coy to the fwd bns.

34. In summary, ’Assessment of Task’ in attack should lead to the phasing of the attack. In defence, this factor should show how many defensive tasks you can comfortably take on based on options in terms of defensive layout.

35. There is a danger of ’situating the appreciation’ in this section if such weight is given to a factor that a conclusion about a course of action is arrived at before the rest of the factors have been considered. This risk applies particularly to the ’time and space’ factor. Subsequent factors are unbalanced by such an initial mistake, but the danger can be avoided by dealing with each factor separately and impartially.

36. When drafting this section, the writer should differentiate clearly between factors and deductions, either by the use of suitable wording or by use of the heading ’Deduction’. If several deductions are drawn from one factor, it may be better to summarize them under a heading ’Conclusion’

since this takes the thought process one step further.

ENEMY COURSES

37. The courses open to the enemy must be considered because they may affect the selection of a course of action. They are really factors and should be considered in the same exhaustive and impartial way. It is logical that enemy courses should normally be considered before our own courses. There are exceptions to this rule, which is one reason why this particular factor is treated under a separate heading.

38. If the enemy has the initiative, his possible actions should be considered before deciding upon our possible course. Even if neither, side has the initiative it is at least prudent to do so. However, if we have the initiative and with it a fair measure of freedom of action, there is danger in considering enemy course first. In doing so we may be tempted to give too much weight to what the enemy may do and so loose the initiative. If we decide to deal with our own courses first, the order of the sections should be:

a. Own courses.

b. Enemy courses.

c. Enemy's most probable course.

d. Selection of own best course.

39. In tactical appreciations it would be normal to assume that we have the initiative in an attack operation and that the enemy has it when we are defending. Furthermore, the enemy options when we are defending are likely to be expressed in terms of the approaches he might use, the kind of force that he might allocate to each approach, whether he will attack by day

or by night etc. When we are attacking, enemy options may be substantially reduced but will cover such things as whether or not he will counter-attack, his likely counter-penetration policy, and whether his dispositions by day will differ substantially from those by night.

40. Courses of action open to the enemy should be considered from his point of view and he should be credited with acting logically unless it is well known that his temperament may lead him to act otherwise in certain circumstances. The deduction from the enemy courses should normally, therefore, include the following 2 aspects with regards to each course under the heading of comments:

a. The likelihood of the enemy adopting the course.

b. The effect of the enemy's adoption of the course on the attainment of our aim.

41. Three useful maxims should be followed when writing en courses:

a. Keep the courses as broad as possible. Too many details usually lead to an unnecessary large number of courses and sometimes misleading.

b. Do not look too far ahead. It is tempting to do so, but it may be dangerous to try to forecast the enemy's action too far ahead and it is usually a waste of time when there is an immediate problem to solve.

c. The course should be expressed briefly, clearly and without qualification. Any comment should follow the unqualified statement of the course.

ENEMY'S MOST PROBABLE COURSE

42. The procedure, where there is most probable enemy course, is to sum up all the possible courses dealt with in the previous argument; the deduction already made as to the likelihood of the enemy adopting each possible course will help. The summary should lead logically to a conclusion, i.e. the enemy's probable course of action.

43. In some circumstances it may not be possible to decide on the enemy's most probable course, either because he has a wide choice or because the selection of a particular enemy course would unduly influences our own action. In such a case, the arguments against selecting the most probable course must be stated and the enemy's course which is most dangerous to us, which constitutes the most immediate threat, should be considered instead.

OWN COURSES

44. It is incorrect to think of enemy courses and our own possible courses as being allied section simply because they both deal with courses and are laid out in a similar way. Enemy courses are factors, own courses are not.

45. In examining our possible courses, full use should be made of all relevant deductions drawn from earlier study of factors, including enemy courses. In particular, the value of deductions on the effect of each enemy course upon the attainment of the aim will now become apparent.

46. It is important not to consider our course merely in relation to the

conclusion reached in the previous action on the enemy's most probable course. The possibility of surprising the enemy must never be forgotten.

47. A brief general statement at the beginning of this section may be useful to clear the air and to avoid complicated courses. There are 3 types of courses which should be considered. The first 2 are optional. They are:

a. **Main Courses**. All possible courses that will achieve the aim, and which are within our capability, must be considered. These are courses that cannot be discussed merely for the satisfaction of proving the point. Occasionally, however, it may be desirable to dispose of a superficially attractive but unprofitable course of this nature in the opening statement.

b. **Combination Courses**. A detailed examination of individual courses may show that a combination of 2 or more of the courses is also likely to attain the aim. The 'combination course' must then be included after the other courses as an entirely separate course and examined separately on it merits in the same way as all previous courses.

c. **Complimentary Courses**. Courses which are not in themselves capable of attaining the aim, but which contribute to it, should be dealt with after the main courses and combination course under a group heading 'Combination Courses'. For example, a possible complementary might be 'security measure' which may contribute to the aim only by allowing a commander to act offensively.

48. Each course should be examined separately on its own merits. No

attempt should be made to weigh the merits of one course against another. This comes in the next section. Each course should be stated clearly, positively and concisely in the form 'Course 1. To....., Course II. To.....' Complicated Courses and courses that are similar to one another should be avoided. In general, a large number of simple courses are better than a smaller number of complicated ones. Each course should be followed by concise statement of its advantages and disadvantages, i.e. its chance of attaining or contributing to the aim. This is usually done by the use of the headings 'Advantages' 'Disadvantages'. If it proves difficult in a particular appreciation to classify statements under these headings, it is permissible to list them as 'Comments'.

SELECTION OF THE BEST COURSE

49. This section is the culmination of the whole argument. In the previous section, the advantages and disadvantages of each course were stated separately, but one course was not weight the others. Now is the time to do this, and if the previous section has been fully and clearly argued it should not be difficult to make this comparison briefly. Some repetitions may be unavoidable, but it should be kept to a minimum.

50. The more the argument, the more convincing it will be. The comparison between courses should be developed logically so that the selection of the best course becomes the natural conclusion. This section must finish with a definite recommendation of the course to adopt, expressed in the infinitive. It is inadmissible to introduce new ideas at this stage. If a new idea does occur, the writer must stop and go back and write it into the

appropriate section. He must then check all arguments subsequent to the amendment to make sure that the new factor or deduction does not alter the reasoning of the written appreciation.

PLAN

51. The argument is now complete and a course of action has been decided upon. This final section, the proposed plan, therefore makes no contribution to the actual solution of the problem but is added because it serves 2 special purposes:

a. By indicating the roles of the forces to be employed it enables the reader to check that the course of action selected is feasible, practicable and within the means available.

b. If the appreciation is accepted by higher authority without serious modification, it serves as a basis for the production of the necessary order or further detailed planning without delay.

52. The plan should avoid too many details but give enough general directions to enable any staff officer to draft the orders required to put the plan into effect. Normally, it needs only an outline plan with a mission included in the first paragraph. As already stated the detail can be shown on an overlay.

53. The plan must be a clear, definite and practical proposal for the employment of available resources. It should be written in clear, good english. It must convey the writer's full intentions to the reader, as briefly as possible. It should, if necessary, be illustrated by a diagram or overlay.

54. The plan must follow the proposed course of action and should not include anything that is not based on, or that does not follow logically from, material discussed in the previous sections. Even at this late stage, if there is a new thought the writer must go back, put it in the right place and check the subsequent argument, amending it as necessary. The proposed plan should follow a logical, generally chronological order. The following aspects are usually included:

a. Forces available and delegation of command and control.

b. The role of forces in broad terms, if necessary, include some general tactical policies.

c. Details of position and times.

d. A broad indication of administrative arrangements.

e. Communications policy.

f. Security or defensive measures if necessary.

REAPPRECIATION

55. Sometimes it is difficult to decide just how far to look ahead. It is usually a matter of judging when some new information is likely to be received, or when the situation will have otherwise changed sufficiently to make a new appreciation necessary. The last paragraph of the appreciation should state when the situation should be re-appreciated in the form:

'Re-appreciated at.....(time and date)', or

'Re-appreciated when.....(a certain event has occurred)'.

REVISION

56. After completing the appreciation, it should be revised and checked to ensure that it will stand up to the following tests:

a. Is the reasoning valid?

b. Is the sequence logical?

c. Is everything in it relevant to the aim, and has anything been forgotten?

d. Is it free from vagueness, ambiguity and prejudice?

e. Is it accurate? Are positions, times and distances, etc, correct?

f. Will the plan achieve the aim?

g. Will it withstand the fire power of the en?

SHORTENED VERSION

57. The commander or staff officer who is well acquainted with the pattern of the full formal appreciation can evolve a shortened version for the more urgent or less complex problem. The details incorporated depend upon the occasion and the level. The process, particularly in the field, may take place in the head or on the back of an envelope, but the principle of a logical approach to the problem remains the same.

58. The short version would probably include only the following headings:

a. Aim.

b. Factors.

c. Own courses.

d. Plan.

SUMMARY

59. The appreciation affords good practice in logical thought and sound reasoning. Whether written or not, it must never be allowed to become a theoretical process which will not stand up to the realities of war. It should be a flexible means for the orderly and practical consideration of the factors affecting the solution of any problem. A firm grasps of the principles of 'appreciating the situation' and the ability to apply them to service problems is of paramount importance to the staff officer.

Annexes:

A. Framework of an Appreciation - Shortened Form.

B. Possible Layout of Courses Section.

C. Example of an Overlay used in a Tactical Appreciation.

TEST QUESTIONS

60. Answer the following questions based on this Chapter:

a. What is meant by an 'appreciation of the situation'?

b. What is the normal sequence of an appreciation in the shortened form?

c. What is a military appreciation?

d. What are the two occasions when an appreciation will be more effective if written?

e. When can a review of the situation be given?

f. What are the 5 easy tests to apply to an aim?

g. What conditions a factor in an appreciation?

h. How are the aim and plan expressed?

i. How are the courses (friendly/en) expressed?

j. What tense as a general rule is used when discussing factors?

MAP APPRECIATION

61. The purpose of this section is to work through a map appreciation in slow time in the following stages:

a. **Stage 1**. Read through entire section in order to get an organized view.

b. **Stage 2**. Put yourself in the position of CO 712 Mech Bn and attempt your own appreciation.

c. **Stage 3**. Work through the appreciation and comments given and compare them with yours. It is very detailed, probably more than you could produce in the time given in your actual examination. Remember it is a disciplined thought process and an examiner will be marking you on your logical reasoning which must reflect the principles of war and those particular key points relevant to the operation under consideration.

GENERAL NOTES

62. As it has been pointed out elsewhere, appreciation is different in all phases of war. The situation given in the following study places you as CO 712 Mech Bn covering a brigade flank against the possibility of a mech bde attack. If you were a mech bn CO, you would be forced to think in terms of a mobile def and can form a very hard hitting reserve to be deployed rapidly

in any direction required. In addition, out of contact, they can be used to re-deploy infantry to an alternative position within reasonable limits.

GENERAL IDEA

63. TYRANNIA, a country lying to the east of NIGERIA (See Annex D) launched an unprovoked attack on NIGERIA. Hy fighting took place in the east of the country, but by early November, Tyrannian forces had succeeded in driving a wedge as far west as MINNA and KADUNA. The Tyrannians then paused; probably to re-gp and to bring up rfts.

64. Int sources have reported that Tyrannians will next conc on a move north with the aim of securing the important rd/rly head at ZARIA. The en will probably lead with II (TY) Mech Bde, which is believed to have arrived in KADUNA on 27 April and thus is fresh and at full str. The bde is thought to be loc on the northern outskirts of KADUNA and believe to consist of:

a. Three Mech Bns (each with 3 mech coys with 13 APCs in each mech coy).

b. 111 Tk Bn (three tk coys with fifteen M48 tks in each coy and one recce coy with 15 tracked recce vehs).

c. One close sp bn (105 mm).

d. One fd engr coy.

65. 7 Div (your div) is prep to def ZARIA. 71 Bde (your Bde) has been designated as the Div Gd Force and has 7 Recce Bn under comd. The GOC's plan is to fight a delaying battle between the 80 and 100 Northings (See Annex E), while the main def posn is prep at ZARIA.

NARRATIVE

66. At 1030 hrs D-1, whilst the bde is moving into a conc area in the JAJI area, Comd 71 Bde gave out his orders at the rly stn in SABON BIRNIN YERO about 5 kms SW of JAJI. (See Annex E).

67. "As you will have heard from the GSO3 Int, we know quite a lot about the enemy plan. It appears most unlikely that he will advance from KADUNA before 0900 hrs on D + 1. Now, although 7 Recce Bn will attempt to delay his leading troops as well as reporting on his progress, we must expect the enemy to reach this general area by about midday on D + 1.

68. As you know, his 11 Bde has now had APCs for some months, and there can be little doubt that he has been training hard with them prior to the war. We can thus expect him to use them for cross country movement. So, although it is reasonable to expect his main axis of advance to be up the KADUNA-ZARIA Road, we must be ready for the unexpected, as he could well use his mobility to attempt to by-pass us in this area. I therefore consider we must prepare for 3 possible approaches:

a. **East**. Between KADUNA-TABU-GIDAN GAYAN Road and RIVER KADUNA, followed by a swing northwards. I think though that he would be rather confined if he did this, and in addition, the small streams running north to south into the KADUNA River will become obstacles to tracked vehicles in many places ('A' on Annex E).

b. **Centre**. Up to general line of the KADUNA-ZARIA Road. I believe this is his most likely approach. However, the east of the

KATABU-SABON BIRNIN YERO stretch of road is quite thickly wooded and the River KWARA on the west is an obstacle in some places. He will therefore be confined to some degree by this approach ('B' on Annex E).

c. **West**. Up to the general line of the RIGANCIKUN-AFAKA-SABON BIRNIN Road and then east/NE to regain the KADUNA-ZARIA Road. Although this route will increase the distance for him to ZARIA he could well use it to attempt to outflank us here especially once he realizes we hold the area around SABON BIRNIN YERO so strongly ('C' on Annex E). Once held up, I expect him to launch hasty attacks against us with his advance guard battalion, and once these are defeated we can expect him to launch a brigade attack; perhaps at last light. When we halt this, as we will, he will most likely try to infiltrate our positions during the hours of darkness, before resuming his armoured assaults the next day.

d. My mission is to hold the general line of the 89 Northings in the centre and River CHIMDAWAKI in the West, within brigade boundaries until 0200 hrs on D + 2. We will by then, I trust, have blunted his attacks and can withdraw to join the rest of the Division in ZARIA.

e. My design for battle is to start hitting the enemy as far out as possible. 7 Recce Bn will initially be responsible for this, but once the enemy gets north of KADUNA or west of AFAKA I intend to pull them back. At that stage the mechanised battalions and 71 Tk Bn

come into play. I intend to use 711 Mech Bn in this SABON BIRNIN YERO area and 712 Mech Bn to cover the west approach. These two battalions will each have one company from 71 Tk Bn under command. 713 Mech Bn with the balance of 71 Tk Bn will form the brigade reserve with the primary task of counter penetration around the flanks of 711 Mech Bn. I want 711 and 712 Mech Bns to initially hit the enemy armour at a distance and to hit it forward of their main defensive positions. Once 7 Recce Bn pulls back they are to watch the flanks and the area between 711 and 712 Bns.

69. Turning to you CO 712 Mech Bn the Comd then said:

> I want you to hold the line of the River CHIDAWAKI between your boundaries (See Annex F). I have not yet had a chance to see the ground myself so I will leave the deployment up to you. However, I see your main positions being on the northern side of the river but with an anti-armour forces initially being deployed forward of the river towards AFAKA. The 2100 foot ring contour in the area 192835 may well prove to be vital ground, but you can determine this when you look at it.

70. Your aim must be to prevent the enemy crossing the river. It is probably an obstacle in place but I suspect there are also many places where he can cross it with his tanks and APCs. You should therefore aim to have your primary defensive position covering the AFAKA-SABON BIRNIN road but be prepared to deploy to alternative positions west and east of that objective. Elements of 7 Recce Bn will be on your flanks when they pull back, so make sure you liaise with them.

71. It is vital that you make comprehensive appreciation and plan, but before you leave for the area I want you to make a map appreciation and

plan from the map. Come and discuss this with me at 1245 hours".

72. As CO 712 Mech Bn you made the fol notes during the O Gp:

a. **Mission**. 71 Bde is to hold line of 89 Northings and River CHIDAWAKI, within bdry, until 0200 hrs D + 2.

b. **712 Mech Bn Grouping**.

(1) Atts.

(a) B Coy, 712 Tk Bn.

(b) one sect, GW Pl.

(c) 71 Tk Bn under comd forthwith.

east of the KATABU-SABON BIRNIN YERO stretch of road is quite thickly wooded and the River KWARA on the west is an obstacle in some places. He will therefore be confined to some degree by this approach ('B' on Annex E).

c. **West**. Up to the general line of the RIGANCIKUN-AFAKA-SABON BIRNIN Road and then east/NE to regain the KADUNA-ZARIA Road. Although this route will increase the distance for him to ZARIA he could well use it to attempt to outflank us here especially once he realizes we hold the area around SABON BIRNIN YERO so strongly ('C' on Annex E). Once held up, I expect him to launch hasty attacks against us with his advance guard battalion, and once these are defeated we can expect him to launch a brigade attack; perhaps at last light. When we halt this, as we will, he will most likely try to infiltrate our positions during the hours of darkness, before resuming his armoured assaults the next day.

d. My mission is to hold the general line of the 89 Northings in the centre and River CHIMDAWAKI in the West, within brigade boundaries until 0200 hrs on D + 2. We will by then, I trust, have blunted his attacks and can withdraw to join the rest of the Division in ZARIA.

e. My design for battle is to start hitting the enemy as far out as possible. 7 Recce Bn will initially be responsible for this, but once the enemy gets north of KADUNA or west of AFAKA I intend to pull them back. At that stage the mechanised battalions and 71 Tk Bn come into play. I intend to use 711 Mech Bn in this SABON BIRNIN YERO area and 712 Mech Bn to cover the west approach. These two battalions will each have one company from 71 Tk Bn under command. 713 Mech Bn with the balance of 71 Tk Bn will form the brigade reserve with the primary task of counter penetration around the flanks of 711 Mech Bn. I want 711 and 712 Mech Bns to initially hit the enemy armour at a distance and to hit it forward of their main defensive positions. Once 7 Recce Bn pulls back they are to (d)(Bn (1 STRIKER) under comd forthwith.

(e) 712 Fd Bty (105mm PH) in DS from 0800hrs D Day.

(f) 2 Tp, 71 Fd Sqn in Sp from 1200hrs D Day.

(2) Dets. Nil.

c. **Timings**.

(1) 71 Bde posn fully prep by 0900 hrs D+1.

(2) 7 Div posn (ZARIA) by last lt D+1.

(3) 71 Bde posn to be held until 0200hrs D+2.

d. **Def Stores and Mines**. 712 Mech Bn allocated:

(1) 1500 A pers mines.

(2) 500 atk mines.

e. **Air**.

(1) Air parity exists.

(2) One Bolkow hel avail for recce for CO 712 Bn R Gp from 1400 - 1530hrs D-1.

f. **Bdrys**. See Annex C.

g. **Met**.

(1) First lt 0600 hrs.

(2) Last lt 1900 hrs.

(3) Short, but sharp, thunderstorms likely in afternoons.

73. The O gp was just about to finish when an IMMEDIATE signal was passed to the Bde Comd, who read it and then said:

> Well Gentlemen, some good news 1st Ghana Division, as part of an OAU force is on its way and provisionally will strike the TYRANTS just south of MINNA at last light on D + 1. If they do, this should relieve the enemy pressure on us and we might then be required to stay here for quite sometime. However, for the moment we must assume we will be required to only hold until 0200hrs on D + 2 and I want to work on this date and time for the present.

You settled down to record your note, study your map and suck your pencil before starting to write in note form your appreciation to be discussed with your Brigadier.

POSSIBLE SOLUTION TO MAP APPRECIATION

74. **Introduction.** This map appreciation is designed to give candidates an introduction and practice in making an appreciation and plan from a map. The aim is to get candidates to understand the process of a map appreciation rather than to teach tactics. So, avoid the temptation to worry over the tactical alternatives.

75. **The Aim.** It is important to get this right. In a defence situation, the aim normally includes 'To hold def posn (where), until (when to)'. A possible aim is: "To hold def posn on line of River CHIDAWAKI between bn bdrys until 0200 hrs D + 2". It would be too limiting to simply say 'to hold a def posn astride RIGACIKUN-SABON Rd".

76. **Factors**. It is important at this point for officers to have a concept of def ops in their mind and to have listed the main principles of def. Other points are:

a. A wide frontage must be covered, and this cannot be covered by one bn gp posn only.

b. Several altn posn may therefore have to be sited. The mobility of APCs allows rapid mov to a selected one.

c. A bn gp guard or screen can be deployed fwd initially, this force then wdrs; perhaps to form a mob res.

d. Meanwhile, several altn posns would have been recce and prep; although time will often only allow one posn to be fully prep, and this should cover the most likely en approach.

e. OPs are estb along the gen line to be def leaving the en in doubt

as to the actual def posn. Once the en threat is identified, the bn then moves into the main def posn or the best blocking position.

f. A res must be kept aval to reinforce the def or for counter penetration.

The order of factors to be discussed in an appreciation is up to the person making the appreciation. In this appreciation, the writer has decided to lead them in the order discussed below.

77. **Rel Str**.

a. Comparison, between 11 (TY) Mech Bde and 712 Mech Bn Gp.

b. **Deductions**.

(1) En has overall superiority of little over 3:1; should be possible to def successfully against these odds, by:

(a) **Attrition**. Must begin as early as possible by placing tks/anti-armr wpns fwd of our main posns.

(b) **Conc of Forces**. I must be able to conc quickly in str to oppose the line of adv he chooses.

(c) **Armd Mob Res**. Mob res in case en achieves overwhelming local superiority in one place or appears to be by-passing posn I have occupied:

(i) En superior in armr and firepower. Therefore I need good defilade posn for my anti-armr wpns and must protect my inf.

(ii) Should think about reverse slope posns. Any fwd slope posn must be well dug in and concealed if I occupy them for long.

78. **Ground.**

a. **Gen Features**.

(1) **Type of Country**.

(a) Overall savannah type country with no predominant high features. Undulating with broad valleys, re-entrants and higher areas. Although there may be some good areas of obsn of these, and thus F of F are likely to be limited in most cases.

(b) However, there is considerable scattered cultivation along the south of the river (A). This area may be good for obsn/F of F over it from north of the river.

(c) Also area of scattered cultivation or area (B). This area may therefore be difficult to use for our concealment.

(d) Gen line on north side of river © does not appear cultivated and will probably therefore give good concealment in def; but F of F may have to be out through the bush.

(2) **Pop**. AFAKA (D) is really outside potential battle area. Otherwise only other centres of pop to note are villages at (E) and (F) which could offer concealment but might be subject to an arty/FGA attack. There are probably other smaller villages around, but these are unlikely to affect our deployment. Scattered small local pop will not create refugee problem of note, but they should be warned of the sit and advised to evac

north (and not south, so as not to give our sit to en).

CHAPTER 6

MOCK EXAMINATION

INTRODUCTION

1. **Background.** By the time students have reached this Chapter they will have covered the entire syllabus of Organisation and Tactics A.

2. **The Tactics A Examination**. This is a three hours examination with a total of 100 marks. A survey of past examinations reveals that a major proportion of these marks are allocated to the question demanding an appreciation, the balance of marks being allocated to knowledge which can be committed to memory. The reason for this is clearly the examiners', besides wishing to see that candidates know their subject material, want to confirm that the candidates understand how to use the knowledge, and whether he is able to express himself in a clear logical manner and is able to conclude the thought process with reasonable, practical solutions in accordance with established principles.

3. **The Aim**. The aim of this Chapter is to give the candidate an opportunity to assess himself under examination conditions:

   a. **Part 1**. The Mock Exam should be completed in a three sessions.

   b. **Part 2**. Possible solutions to the Mock Examination.

4. **Examination Techniques and Practice**. Time in an examination is always short and candidates have to make a simple time appreciation and

allocate their time in accordance with the marks:

a. Read the questions and make sure you understand it.

b. Underline main points on the question paper for easy reference.

c. Answer the questions.

d. **Don't**:

(1) Give more in your answers than what is asked for.

(2) Be over elaborate, you have no time.

(3) Try to be funny or too smart.

(4) Waste time on things you don't know.

e. **Do**:

(1) Answer the questions.

(2) Be neat and tidy.

(3) Keep to your time appreciation.

(4) Make your answers complete even if you have note form.

(5) Leave time to read through your answers in order to correct minor mistakes.

(6) Go to your formation HQ and acquire copies of previous examinations and practice solving them within the time allocated. Practice! Practice!! Practice!!!

MOCK QUESTION 1

GENERAL IDEA

Reference:

A. NIGERIA, Sheet 102 SW First Edition. 1: 50,000.

1. BLUELAND AND REDLAND are 2 neighbouring countries in the SHELL Region of West Africa. Both nations were regions of same country under a Colonial Empire, after a referendum, both nations separately became independent on 1 Jul 82.

2. The international bdry between the two countries runs along an imaginary line drawn along Northing 36. The bdry separates the BASAWA tribe. This tribe occupies the area between the towns of BASAWA in REDLAND and UGWAN MALIAM in BLUELAND. Before the discovery of uranium in UNGWAN ABARSHI, BLUELAND in August 1983, relations between the 2 countries were normal, at least superficially.

3. While the economic life of BLUELAND flourished with the proceeds from the uranium industry, REDLAND with a battered economy had been hit by one natural disaster after another including the 1983 devastating draught and the resultant famine. There was a glaring difference between the high standard of living of BLUELAND BASAWAS and the REDLAND BASAWAS wallowing in abject poverty. This situation brought about much discontentment and REDLAND BASAWAS started nursing the desire to merge with their brethren in BLUELAND.

4. To forestall the dangerous trends in REDLAND, their mercurial Head of State, Marshall Ino in his speech to the nation on the Independence Day Anniversary renewed his country's age long aspiration for the annexation of the entire BASAWA tribal areas in BLUELAND which now has uranium in addition to its fertile land. This resulted in bickering between the 2 nations.

5. Efforts by the OAU Committee of WISEMEN to get the 2 nations to reach a compromise were always frustrated by REDLAND Head of State who vowed to use all available means to regain what he regarded as the legitimate right of his nation. Intelligence report reaching BLUELAND revealed that REDLAND was on the war path and is expected to formerly declare war on BLUELAND any time soon. By 10 March this year, it was revealed that REDLAND had recruited some agents in BLUELAND amongst the BASAWANS.

6. On her part, BLUELAND ordered a general mobilization and crack 7 Div was ordered to move to the border to check any pre- emptive strike by REDLAND Forces. The Forces were not to move beyond 5 km from the border to make room for possible political settlement.

SPECIAL IDEA

7. In Apr while all BLUELAND were celebrating the National Festival of EBE with 40% of the tps in the fwd lines on pass, REDLAND unprovocatively launched attack on BLUELAND across the border. The action was condemned worldwide and a special UN Security Council convened to mediate in the crisis.

8. With pressure from world leaders including Ino's friend Air Marshall Achaba of ODUDUWA Republic, Ino orderd his tps back into REDLAND territory. Meanwhile, President Ali of BLUELAND has resolved to teach Ino an eternal lesson and had secretly received the blessing of Mr Husali, the Prime Minister of KATAB and General Eruk of UGUNE Republic. BLUELAND Army was ordered to launch a lightening operation to occupy half of REDLAND including the Capital, KANO.

9. BLUELAND and REDLAND Armies are organized as NA. You belong to BLUELAND Army. Time zone used throughout is ALFA.

EXAMINATION INSTRUCTIONS

10. The fol instrs must be adhered to:

a. Answer all questions.

b. Bonus of 5 marks is allotted for Staff Duties and neatness.

c. Time allowed is 3 hrs.

ADVANCE

NARRATIVE 1

11. The GOC 7 Div has ordered 71 Bde to lead the advance. The Bde Comd decided to advance with 2 bns up. 711 and 712 Mech Bns have been designated to lead the advance with 711 Mech Bn advancing along ZARIA-HUNKUYI axis while 712 Mech Bn is to advance along ZARIA-FUNTUA axis. 71 Bde is currently at a conc area in the general area HANWA at Grid SQ 5829.

12. At his O Gp the Bde Comd gave the composition of 711 Mech Bn after detaching one mech coy as:

a. Remaining under Comd A Coy 71 Tk Bn.

b. Under Comd one recce pl 7 Recce Bn.

c. Remaining in DS 711 Fd Arty Bty (105mm).

d. In Sp one tp Fd Engr Sqn.

REQUIREMENT 1 - 10 MARKS

13. You are Lt Col S Adoyen, the CO 711 Bn Gp, the right leading unit of 71 Bde Gp expected to advance along ZARIA-HUNKUYI axis:

a. Show diagrammatically your bn order of march.

b. What control measures will you have for your bn gp advance?

ATTACK APPRECIATION

NARRATIVE 2

14. Your leading elements at 532397 came under en fire coming from the high ground in SQ 5240. Reports from the leading elements to you include the following:

a. **Bn Disposition.**

(1) Left fwd pl at 525402.

(2) Right fwd pl at 532408 with one section of atk (107mm).

(3) Depth pl at 527407 with one tk pl (T55).

b. **Intention**. To cause max delay to the advancing forces.

c. **Obstacles**. The road is heavily mined and covered with direct fire. The rivers are deep, swampy and unaffordable by tks.

d. **Air Situation**. Air parity exists.

REQUIREMENT 2 - 25 MARKS

15. It is now 0830hrs. Obj to be secured by 1500hrs. You are to write a detailed appreciation up to plan for the capture of the Obj. The Bn Gp concentration area is at the airport in SQs 5630 and 5730.

DEFENCE

NARRATIVE 3

16. Your attack was successful. The Obj was captured. You captured 4 PW and the rest of the en will never give anybody any trouble. You have reorg and have carried out exploitation within set bdry. You grabbed your HF set and sent a SITREP to the Bde Comd. You asked your men to have some rest but they must remain alert. Suddenly, the voice of Bde Comd rumbled on your set, "Jolly good show Samuel". I want you to hold your loc, only to cause delay of course. The bde would need to some sort itself out and would not want those bastards to intrude. You must be prep to hold on till first lt tomorrow. In addition to aval resources, I am prep to send to your loc:

a. 500 atk mines.

b. 100 A Pers mines.

c. 100m of Barbed Wire and few tons of explosives.

REQUIREMENT 3 - 8 MARKS

17. a. State and explain very briefly the principles of def.

b. State briefly the factors that you would consider in planning your def.

c. What factors will influence your priority of work in the grip of the def posn?

d. Since you are expecting the en by first lt tomorrow, what additional information or steps would you ensure that you are familiar with?

WITHDRAWAL

NARRATIVE 4

18. You have successfully consolidated your def posn on both sides of ZARIA-HUNKUYI Rd (SQs 5241 and 5341) awaiting further instructions from your Bde Comd. While you were busy developing your defs REDLAND Government now solicits for a peace talk with BLUELAND Government. The OAU mediation committee ordered a ceasefire to provide a conducive atmosphere for a round table negotiation. Consequently, the BLUELAND Army was ordered to wdr back into their territory.

19. Your Bde Comd equally ordered you to wdr from your present posn to take up a def posn at bridge GR 560343.

REQUIREMENT 4 - 6 MARKS

20. As CO 711 Mech Bn enumerate the control measures you will employ

to ensure smooth wdr.

REQUIREMENT 5

21. Answer the following questions:

a. What is the component and purpose of the grouping in battle procedure? (2 Marks).

b. What is the key to efficient battle procedure? (3/4 Marks).

c. What information should be contained in 'b' above? (2 Marks).

d. State the 3 important principles of advance? (1 Mark).

e. In planning the conduct of advance, a commander at any level is faced with either advancing his main forces on a broad or narrow front. Name the 4 principal factors that you will consider in making your choice? (1 Mark).

f. What is the component of the advancing force? List them (1 Mark).

g. State the sequence of contact report? (1 Mark).

h. List the possible groups you might have in the conduct of an attack? (1 ½ Marks).

i. What staging areas are used in an attack? (2 ¼ Marks).

j. Name the phases in the conduct of a deliberate attack? (1 ¼ Marks).

k. Name only 5 factors that influence the choice of a ground in def? (1 ¼ Marks).

l. As the CO 711 Bn Gp, name 4 surveillance resources that are available to you in defence? (1 Mark).

m. Priority of work in the construction of def posn normally varies

but is usually based on some factors; name 4 of these factor? (1 Mark).

n. What are the essential requirements for successful withdrawal? (1 Mark).

o. What do you understand by key timings in withdrawal? Name them (1 Mark).

p. Enumerate the 3 distinct roles of obstacles in withdrawal? (3/4 Marks).

q. What essential measures will you take to ensure that control is not lost during withdrawal? Name only 5. (1 ¼ Marks).

INSTRUCTION TO EXAMINERS

22. **Introduction**. Each candidate will give his own answer to the various requirements. Examiners will simply give marks to those answers which:

a. Give the required information.

b. Shows that the candidate understands what was required.

23. **Possible Solutions**. Those given in this section are simply possible example solutions extracted from previous chapters. Candidates clearly will be given credit for common sense and their own experience to a degree, but in an examination to stray from the exact requirement of an answer is dangerous. Each candidate will have his own answer to questions and they contain the necessary information.

REQUIREMENT 1 SOLUTION

24. **Bn Order of March**. No standard grouping can be given but the

following may be needed as a reasonable guide to candidates' solutions:

a. **Advance Guard or Van Guard**.

(1) Since the Bde Comd has detailed one mech coy, the Bn Gp has only two mech coys and one tank coy which means at best only one Combat Team (CT) may be formed. It would therefore be very unlikely for any CO to lead with more than one CT.

(2) In the circumstances the choice the candidate has is to lead with either an infantry or tank heavy CT, either could be correct.

(3) The best probable solution would be to lead with an Inf CT keeping the tank CT in reserve as its strength lies in its fire support and not bayonets.

(4) The advance guard clearly would contain:

(a) Minimum of 1 x Mech Pl.

(b) Minimum of 1 x Tank Pl.

(c) Engr Recce Element.

(d) FOO and possibly MFC.

b. **Main Body**. This would include the balance of the Bn Gp. A likely Order of March might be:

(1) Second Company Group.

(2) CO's Group (incl BC).

(3) Third Company Group.

(4) Balance of F Ech (incl Engr, who should be ready to come forward if required).

(5) OC Tk Coy could possibly command a rear guard but in

the given circumstances (i.e. one mech coy detached) the most that could be spared for a rear guard could be one tk pl.

c. **Flank and Forward Protection**. This clearly is a task for recce, tps, air recce and possibly patrols, but must be carefully controlled in order to ensure that they are not mistaken as enemy forces.

d. **Control Measures**. In an advance to contact these would include:

(1) An Axis.

(2) Cleared Routes.

(3) Bounds.

(4) Report Lines.

(5) Boundaries.

(6) Clear orders on by-passing.

REQUIREMENT 2 SOLUTION

25. As indicated in Chapter 5, an appreciation and plan are personal matters and each person's efforts will relate to his thought process in the light of established principles. An example of this process is given at Chapter 5. Provided candidates have mastered the Appreciation Format (Annex A to Chapter 5) and have covered the main factors: Ground, Enemy, Assessment of Tasks, Time and Space, a reasonable appreciation and plan should have been completed. The candidate will get the best value from this requirement if he submits it to a member of his unit who has attended the Senior Course. He should discuss the matter in detail with his selected adviser. In the absence of anyone to assist, candidates may find the "Notes

on Combat Appreciation" given at Annex A to this Chapter a help in correcting their appreciation.

Annex:

A. Notes on Combat Appreciation.

REQUIREMENT 3 SOLUTION

26. The principles of def are:

a. Ground of Tac Importance.

b. Concealment.

c. Depth - deploy in order to:

(1) Block gaps between fwd posns.

(2) Surprise an attacker.

(3) Absorb the en momentum.

(4) Contain en pen until it is destroyed by C-attack.

d. Mutual Sp - sub units must be capable of producing fire on the front, or rear of their neighbouring sub-units.

e. All-round defence capable of defeating attack from any direction.

f. Reserves - Need to meet the unexpected and also for C-pen.

g. Administration.

27. Factors to consider in planning any def:

a. Vital ground.

b. Important ground.

c. Intelligence - discover all possible facts about en.

d. Coordination - fire sp and obs plan.

e. Concealment.

f. Offensive action.

28. Factors that would influence priority of work:

a. En threat.

b. Ground.

c. Time available.

d. Resources.

e. Tracks.

29. In a def posn at ni as a Bn Gp Comd I would like:

a. To know what is happening to my front.

b. To ensure that no en infiltrates between my defended localities.

c. To conceal my defended localities.

d. To be able to identify friends from foes.

e. To be able to destroy en attacks on my defended localities.

f. To be able to destroy the en in prepared killing ground or ambushes.

REQUIREMENT 4 SOLUTION

30. To ensure a smooth withdrawal, either in the day or at ni, the following control measures need to be applied:

a. **Reconnaissance of the New Def Posn**. A recce party containing element of all the components of the battle gp must recce and prepare the new def loc well in advance and be ready to receive the main body when it finally withdraws.

b. **Timing**. A very careful selection of the key timings must be made by the Comd. This includes:

(1) The time up to which the posn must be denied.

(2) Time before which there will be no rearward mov except by recce party.

(3) Time posn will be finally abandoned. This will allow arty fire and or aircraft to engage the en.

c. **Removal of the Non-Essentials**. All vehs and pers who may not be needed for the task of denial of the present posn must be moved forward to the new main posn well in time before the withdrawal begins.

d. **Demolition Plan**. The general plan involving demolition of targets between the current and the new main posn must be made known to all tps before the withdrawal starts. This will make the tps to know which routes will be opened for withdrawal.

e. **Movement Control**. Movement of tps and vehs should be reported regularly to the Comd whose duty it is to monitor the progress of the ops. Effective use of check points, RVs and report lines must be made.

f. **Communication**. Effective communication system must be employed. Radio traffic must be as light as possible. There must be a pre-arranged alternative frequency which will be used if and when the en intercepts the frequency already in use.

REQUIREMENT 5 SOLUTION

31. The answers to this requirement in note forms are:

a. **Component** - 1 Mark.

(1) R Gp.

(2) O Gp.

(3) Main Body:

(a) Habour Party.

(b) F Echelon.

(c) A Echelon.

(d) B Echelon.

b. **Purpose** - 1 Mark.

(1) R Gp Recce and Planning.

(2) O Gp Receipt and Issue of Orders.

(3) Harbour Party, recce and layout of assy area.

(4) F Echelon - Fighting men, eqpt and vehs.

(5) A Echelon Replenishment.

(6) B Echelon - Men, eqpt and vehs not needed for the immediate battle.

c. **Early Wng O**. This is the key to efficient battle procedure. A Wng O should contain:

(1) Description of the task.

(2) Earliest time of move of the main body.

(3) RV and time for the O Gp.

(4) Loc of assy area and time for move of harbour party.

(5) Regrouping.

(6) Any limitation on recce.

(7) Admin arrangements (2 marks).

d. **Principles**.

(1) Int.

(2) Maint of momentum.

(3) Quick reaction (1 mark).

e. **Factors.**

(1) Aim.

(2) Ground.

(3) Enemy.

(4) Air Sit (1 mark).

f. **Components of the Force.**

(1) Force HQ.

(2) Recce Elm.

(3) Leading Bn or Coy gp.

(4) Depth Bn or Coy gp.

(5) Flank screens and gds (1 mark).

g. **Contact Report Sequence**.

(1) Time of contact.

(2) Where the contact is.

(3) Detail of the contact.

(4) What the en is doing.

(5) What you are doing about it (1 mark).

h. **Gps in an Assault**.

(1) Assault Gp.

(2) Fire Sp gp.

(3) Flank protection.

(4) Cut-off tps.

(5) Tps for exploitation (1 ¼ mark).

i. **Stages in an Attack**.

(1) Conc Area.

(2) Assy Area.

(3) FUP.

(4) SL.

(5) Final Asslt Posn (1 ¾ marks).

j. **Phases in a Deliberate Attack**.

(1) Prep Phase.

(2) Deployment Phase.

(3) Approach and Asslt Phase.

(4) Reorg Phase.

(5) Exploitation Phase (2 ¼ marks).

k. **Factors Influencing the Choice of Ground**. There are 8 all together as listed below; any 5 from the candidates should be accepted: (1 ¼ mark).

(1) Principles of defence.

(2) Need to hold ground of tactical importance.

(3) Need to cover en approaches.

(4) Need to site anti-armour wpns in def loc.

(5) Importance of concealment.

(6) Need to cover obs with fire.

(7) Pros and cons of fwd and reverse slope posns.

(8) Suitability of posn for def at ni.

l. **Surv Devices.**

(1) Recce Pl.

(2) Surv Pl.

(3) MFCs.

(4) FOOs.

(5) Inf OPs.

(6) Ptls. Any 4 of these should be accepted (1 Mark).

m. **Factor Determining Pri of Work.**

(1) En threat.

(2) Ground.

(3) Time aval.

(4) Resources (1 mark).

n. **Req for Successful Wdr.**

(1) Clear design for battle.

(2) Sound arrangements for control.

(3) Simple and flexible plan.

(4) Ability to instill in tired and frightened tps an aggressive spirit and the will to fight (1 mark).

o. **Key Timings in Wdr.**

(1) Timings normally given by the Fmn Comd.

(2) They are:

(a) Time up to which the posn is to be denied to the en.

(b) Time before which there will be no rearward move except recce party (1 mark).

p. **Roles of Obs in Wdr.**

(1) To assist the defending forces to break clean on moving back.

(2) To impose delay between posns, to enable main body

move back unmolested.

(3) To inhibit en fwd mov (3/4 marks).

q. **Con in Wdr.**

(1) Clear Orders.

(2) Key Timings.

(3) Careful coord of dmls.

(4) Traffic Control.

(5) Good Communications (1 ¼ mark)

ANNEX A TO
CHAPTER 1

Army Form W 4012 B
R.N. Form S 1543
(Revised 1968)

Serial No.....

Security Classification.....

ORDERS TO THE DEMOLITION FIRING PARTY COMMANDER

NOTE: Parts I, II and III will be completed and signed before this card is handed to the Demolition Firing Party Commander. Paras. 4 and 5 can only be altered by the authority issuing these orders. In such cases a new form will be issued and the old one destroyed.

From..... To.....

Part I: Orders for Preparing and Charging the Demolition Target

1. a. Description:.....

b. Location:…….....……

Map Name and Scale.....

Sheet No.....Grid Reference.....

c. Code word of Demolition Target (if any).....

d. Attached photographs and special technical instructions.....

….....

2. The DEMOLITION GUARD is being provided by (Unit).....

3. You will prepare and charge the demolition target to the STATE OF READINESS

by..... hours on..... (Date).....

Any changes may only be made on the order of the issuing authority, or by the officer designated in Para 4d and will be recorded below.

Note: All orders received by message will be verified by the code word at Para 1c. If the order is transmitted by an officer in person, his signature and designation will be obtained in the column headed "Authority".

Security Classification.....

PART II -ORDERS FOR FIRING

Note: The officer issuing these orders will strike out the sub-paras or paras 4 and 5 which are not applicable. When there is a Demolition Guard, sub-para 4d will always be used, and para 5 will always be struck out.

4. a. You will fire the demolition as soon as you have prepared it.

b. You will fire the demolition at ..... hour on .....(date).....

c. You will fire the demolition on receipt of the code word.....

d. You will fire the demolition when the officer whose designation is .....has signed para. 8 below.

Emergency Firing Orders (ONLY applicable when there is No Demolition Guard)

5. YOU WILL NOT FIRE the demolition in any circumstances except as ordered in para.4 above or YOU WILL, FIRE the demolition on your own initiative if the enemy is in the act of capturing it.

PART III -ORDERS FOR REPORTING

6. After firing the demolition you will immediately report results to the officer who ordered you to fire. In the event of a partial failure, you will warn him, and immediately carry out the work necessary to complete the demolition.

7. Finally you will immediately report the results to your Unit Commanding Officer (See Para l3).

Signature of Officer issuing these Orders.....….....

Name (in capitals).....

Designation.....

Time of issue .....Date of issue .....

ART IV-ORDER TO FIRE

8. Being empowered to do so I order you to fire NOW the demolition described in Para 1.

Signature.....

Name (in capitals).....

Designation.....

Time.....

READ THESE INSTRUCTIONS CAREFULLY

PART V -GENERAL INSTRUCTIONS

9. You are in technical charge of the preparation, charging and firing of the demolition target described. You will nominate your deputy forthwith, and compile a seniority roster of your party. You will ensure that each man knows his place in the roster, understands these instructions, and knows where to find this form if you are hit or unavoidably absent. You will consult with the Demolition Guard Commander on the siting of the firing point.

10. You must understand that the DEMOLITION GUARD Commander (where there is one) is responsible for:

a. Operational command of ALL troops, at the demolition site. (You are therefore under his command).

b. Controlling all traffic and refugees.

c. Giving you the order to change the STATE OF READINESS from “1 (SAFE)” to “2(ARMED)” or back to “1 (SAFE)” again. You will inform him of the time required for such a change.

d. Passing to yell the actual order to fire.

11. When there is no demolition guard and you are instructed in Para 4 to accept the order to fire from some particular officer it is important that you are able to identify him.

12. If you get orders to fire other than those laid down in Para 4 you should refer them to the Demolition Guard Commander or if there is no Demolition Guard Commander, to your immediate superior. If you cannot

do this, you will ONLY depart from your written instructions when you are satisfied as to the identity and over-riding authority of whoever gives you these new orders, and you will get his signature in Para 8 whenever possible.

13. The report to your Unit Commanding Officer, as called for in Para 7, should contain the following information (where applicable):

a. Identification reference of demolition.

b. Map reference.

c. Time and date when demolition was fired.

d. Extent of damage accomplished, including:

(1) Estimated width of gap.

(2) Number of spans down (in the case of a bridge).

(3) Size and location of craters in a road or runway.

(4) Mine laid.

e. Sketch showing effect of demolition.

ANNEX B TO
CHAPTER 1

ARMY FORM W4012C (Revised 1971)

Serial No.....Security Classification.....

ORDER TO DEMOLITION GUARD COMMANDER

Notes:.....

1. This form will be completed and signed before it is handed to the Commander of the Demolition Guard.

2. In completing the form, all spaces must either be filled in or lined out.

3. The officer empowered to order the firing of the demolition is referred to throughout as the "Authorized Commander"

From..... To.....

PART 1 -PRELIMINARY INSTRUCTIONS

1. a. Description of target .....

b. Location:.....

Map Name and Scale.....Sheet No.....

Grid Reference.....

c. Code word or code sign (if any) of demolition target.....

2. The authorized Commander is.....

(give appointment only). If this officer should delegate his authority you will be notified by one of the methods shown in Paragraph 4, below.

3. **THE DEMOLITION FIRING PARTY COMMANDER** has been/will be provided by .....

4. All messages, including any code words or code signs (if any) used in these orders, will be passed to you by:

a. Normal command wireless net, or

b. special liaison officer with communications direct to the authorized commander, or

c. Telephone by the Authorized Commander, or

d. The Authorized Commander personally, or

e. .....

(Delete those NOT applicable)

Note: All orders sent by message will be prefixed by the code word or code sign (if any) at paragraph 1c and ALL such messages must be acknowledged.

PART II - CHANGING STATES OF READINESS

5. The demolition will be prepared initially to the State of Readiness by ..... hours on..... ..... (date).

6. On arrival at the demolition site, you will ascertain from the Commander of the Demolition Firing Party the estimatedtime required to change from State "1 (SAFE) to State "2 (ARMED). You will ensure that this information is passed to the Authorized Commander and is acknowledged.

7. Changes in the State of Readiness from state "2" (SAFE) to Sate "2" (ARMED) or from State "2" to State "1" will be made only when so ordered by the Authorized Commader. However, the demolition may be ARMED in

order to accomplish emergency firing when you are authorized to fire it on your own initiative.

8. A record of the changes in the State of Readiness will be entered by you in the table below, and on the firing orders in possession of the Commander of the Demolition Firing Party

Note: If the order is transmitted by an officer in person, his signature and designation will be obtained in the column headed "Authority".

9. You will report completion of all changes in the State of Readiness to the Authorized Commander by the quickest means.

PART III - ORDERS FOR FIRING THE DEMOLITION

10. The order for firing the demolition will be passed to you by the Authorized Commander.

11. On receipt of this order you will immediately pass it to the Commander of the Demolition Firing Party on his demolition order form ("Orders to the Demolition Firing Party Commander").

12. After the demolition has been fired you will report the results immediately to the Authorized Commander.

13. In the event of a misfire or only partially successful demolition you will give the firing party protection until such times as it has completed the demolition and report again after it has been completed.

Notes:

1. One sub-paragraph of paragraph 14 must be deleted.
2. The order given herein can only be altered by the issue of a new

form, or, in emergency by the appropriate order (or code word if used) in Part V.

14. a. You will order the firing of the demolition only on the order of the Authorized Commander or

b. If the enemy is in act of capturing the target you will order the firing of the demolition on your own initiative.

PART IV - CODE WORDS (IF USED)

Action to be taken:.....

a. Change State of Readiness from "1" to "2" (See Paragraph 7).

b. Change State of Readiness from "2" to "1" (See Paragraph 7).

c. Fire the demolition (See Paragraph 10).

d. Paragraph 14a is now cancelled. You are now authorized to fire the demolition if the enemy is in the act of capturing it.

e. Paragraph 14b is now cancelled. You will order the firing of the demolition only upon the order of the Authorized Commander.

f. Special authentication instructions, if any.

g. The Authorized Commander is changed to…….

The new Authorized Commander can be indicated by his address group or encoded title. An effective time can be added in code if required. PART V

Signature of officer issuing these orders.....

Name (printed in capital letters).....

Rank.....Appointment .....

Time of issue.....hours . . . . (date)

PART VI - DUTIES OF THE COMMANDER OF THE DEMOLITION GUARD

15. You are responsible for:

a. Command of the demolition guard and the demolition firing party.

b. The safety of the demolition from enemy attack or sabotage.

c. Control of traffic and refugees.

d. Giving the orders to the demolition firing party in writing to change the state of readiness.

e. Giving the orders to the demolition firing party in writing to fire the demolition.

f. After the demolition, reporting on its effectiveness to the Authorized Commander.

g. Keeping the Authorized Commander informed of the operational situation at the demolition site.

16. You will acquaint yourself with the orders issued to the Commander of the Demolition Firing Party and with the instructions given by him.

17. Tile Demolition Guard will be so disposed as to ensure at all time completed all-round protection of the demolition against all types of attack or threat.

18. The Commander of the Demolition Firing Party is in technical control of the demolition. You will agree with him the site of your HQ and of the firing point. These should be together whenever practicable. When sitting them you must give weight to the technical requirements of being able to view the

demolition and have good access to it from the firing point.

19. You will nominate your deputy forthwith and compile a seniority roster. You will ensure that each man knows his place in the roster understands his duties and knows where to find this form if you become a casualty or are unavoidably absent. The seniority roster must be made known to the Commander of the Demolition Firing Party.

20. Once the State of Readiness “2 ARMED” has been ordered, either you or your deputy must always be at your HQ so that orders can passed on immediately to the Commander of the Demolition Firing Party.

ANNEX A TO
CHAPTER 2

HAND MINELAYING

GENERAL

1. This Annex deals entirely with laying mines by hand within a Battalion area.

TERMINOLOGY

2. Terminology directly applicable to hand laying includes:

a. **Surface laid**. Not buried.

b. **Pattern**. Eases laying of mines and lifting. Follows a sequence.

c. **Scattered**. Difficult to carry out. No pattern.

d. **Cluster**. Patterns always have mines in cluster.

e. **Strips**. When by hand, mines are laid in strips.

HAND LAYING DRILLS

3. There are 2 Drills for laying buried mines by hand. These are Drill A and Drill B.

a. **Drill A.** The drill produces the better minefield. Mines are laid in strips. The strips need not be paralleled to one another. Their direction can be varied to produce an irregular pattern to make the best use of available concealment, and to conform to the shape of the

ground. Recce and setting out cannot be satisfactorily done in the dark. Drill A is usually used for barrier and defensive mine fields.

b. **Dirll B**. In Drill B, three parallel strips are laid simultaneously at 18-pace centres, thus producing a regular minefield of limited depth. The drill is designed to provide a simple method of laying a protective minefield in which the lack of depth is offset by covering the field with small arms fire. Some recce and setting out are usually necessary. The drill is not suitable for defensive or barrier minefields.

TIME LABOUR AND STORES

4. It is of course impossible to give firm times for laying minefields as they will vary from case to case. Below are some yardsticks giving the timings required for various operations in average conditions.

BURIED MINES

5. A Field Troop NAE or an adequately trained infantry platoon, marking by day without enemy interference, with a maximum stores carry of 200 metres and using Drill A should:

a. 50 mixed clusters (each one anti-tank mines and 3 anti-personnel mines) per hour.

b. 55 anti-tank cluster (each one anti-tank mines) per hour.

6. The rates of laying shown above should be multiplied by the following factors when working at night:

a. By moonlight - 2/3.

b. Dark night - ½.

7. The following will slow down the rate of laying and allowances must be made for them:

a. Longer carry of mines or other stores.

b. Difficult going.

c. Difficult ground.

d. Enemy interference.

8. Rather faster rates will be achieved when using Drill B.

9. **Surface Laying Drill**. Using this Drill, one field troop NAE or one trained infantry platoon should be able to lay 300 anti-tank mines per hour.

PLANNING AND ORGANIZATION

10. Laying a minefield in the face of the enemy. When a minefield is being laid, normally by night, efficient organization and control are essential if the operation is to be successfully completed with the minimum of casualties. Some points to be observed are:

a. **Reconnaissance**. Thorough recce is essential.

b. **Rehearsal**. Rehearsal is essential for all but the smaller operations.

c. **Command**. Some noise is inevitable and therefore the chances or laying the minefield without enemy interference are slender. Covering troops must therefore be provided so that the troops who are laying the mines will only have to fight as last resort. Protective troops and those laying the mines must be under one all arms

commander whose responsibilities will include deciding whether the work is to continue in the event of enemy attack.

d. **Organization**.

(1) A single unit or subunit should be detailed to lay the whole minefield.

(2) The mine-carry vehicles must join the laying parties before the operations starts.

(3) Approach routes to the minefield must be clearly marked by training tape or other guidelines.

MARKING REPORTING AND RECORDING

11. Marking, reporting and recording are all vital jobs that have to be carried out during a minefield's life. Recording is especially vital.

12. Minefield records are recorded on AF W 407. These are filled in by NAE personnel, but students should be aware of the Form.

ANNEX A TO
CHAPTER 4

DETAILS OF RIVER CROSSING EQUIPMENT

APPENDICES

1. The Medium Girder Bridge (MGB).
2. The Class 16 Bridge (Airportable) (APB).
3. The MS Amphibious Equipment.

(included for interest only).

4. The Infantry Assault Boat Raft.

APPENDIX 1 TO
ANNEX A TO
CHAPTER 4

THE MEDIUM GRIDER BRIDGE

1. **Purpose**. The Medium Girder Bridge (MGB) is hand-built bridge designed for rapid construction for the purposes:

a. In forward areas, as the replacement for bridges launched from tanks, or as an alternative to them when out of contact with the enemy.

b. On battle group re-supply routes.

c. In limited war, where the Class 16 APB is not adequate.

d. In Counter-Insurgency and Internal Security operation where speed of emplacement is important.

2. **Descriptions**. The MGB is a deck bridge with width of 2m. It can be built in single storey construction for short spans or light loads, or a double story for long spans. By varying the structure, different spans capable of taking different load classes can be obtained as shown below:

Class	Single Story	Double Storey
60	9m	30m
30	14.6m	41.5m
16	22m	49m

3. **Carriage**. The bridge parts come in standard loads on transport pallets which can be carried on 4 ton trucks and special trailers. The pallets are pulled directly off the truck or trailer on the ground. A bridge set is 11

loads which contains all the following stores for construction:

a. One 30m double storey bridge.

b. Three 9m single storey bridges.

c. Other permutations of single and double storey construction.

4. **Construction Details**. As no component is greater then a 6 man load and off loading from the vehicles is so quick, construction times are very fast.

Length in Feet	9m	14.6m	22m	30m
Class	60m	30	16	60
Construction Party	1NCO+8	1NCO+8	1NCO+16	1NCO+24
Time in Minutes				
Day	20	45	60	60
Night	30	60	75	120

APPENDIX 2 TO
ANNEX A TO
CHAPTER 4

THE CLASS 16 BRIDGE (AIRPORTABLE)

1. **Purpose**. To provide Class 16 raft, floating bridges and 15m span bridges from light-weight airportable equipment which can be erected by hand.

2. **Description**.

a. The basic unit is a light alloy box 3.65m x 38m weighing about 250 kilos. The top of the box forms the deck of the bridge and the structure of the box combines the functions of bridge girders and cross girders. The box combines the functions of buoyancy in the floating version. Long tapered ramps are fitted to the boxes at each end of bridge. In the day, bridge structure.

b. For floating bridges and rafts, pneumatic floats are added to each end of the boxes to give additional buoyancy and stability.

c. The raft is propelled by outboard motors fitted to grid sponsors at its 4 corners.

d. The equipment consists of 2 basic sets. The raft set contains sufficient material to build one raft, and the launching set contains the parts required to make the rafts set into a fixed 15m bridge.

3. **Carriage**. All the equipment is carried on special trailers which can be towed by 1-ton trucks. Five trucks and trailers are required for one raft set.

4. **Airportability**. One raft set without its trailers can easily be carried in on Hercules.

5. **Construction Time**. A raft takes 24 men 1 ¾ (one three-quarter) hours to erect by day. A 15m bridge can be built in 45 minutes by day by 16 men. Studies are in progress to further reduce these times.

ANNEX A TO
CHAPTER 5

POSSIBLE LAYOUT OF AN APPRECIATION SHORTENED FORM

Identifying Reference SY CL Copy No 1 of 1 or OPS3

AN APPRECIATION OF THE DEF OF 177 MOT BN AREA

For: Lt Col ME Ugbaja

By: Maj MA Ibrahim

At: 1700 Zone Time On: 5 Feb 92

Ref: G/782 NIGERIA, Sheet 235 KADUNA SOUTH Edition 1, 1:50,000.

TIME ZONE USED THROUGHOUT THE APPRECIATION: ALFA

AIM

1. To hold.....with fol limitations:
   a. .....
   b. .....

FACTORS

EN

2. Str.....
3. Tac……
4. Disposn.....

5. Eqpt……

6. Morale.....

7. Res and Rft.....

8. Deductions.....

   a. .....

   b. .....

   c. .....

   d. .....

GRD

9. Vital Ground or Ground of Tac Importance.....

10. Approaches to Vital Ground.....

11. Features Commanding Approaches.....

12. Obs.....…….....

13. Deductions.....

   a. .....

   b. .....

   c. .....

OTHER FACTORS

14.

EN COURSES

15. **Course A**. To attack.....

16. **Comments**. .....

17. **Course B**. To attack.....

18. **Comments**. .....

19. **Deductions**. .....

a. En's most probable course in Course B, but he might.....

b. We should be.....

c. .....

ASSESSMENT OF TASKS

20.

21. **Deductions**.

a. .....

b. .....

c. .....

SUMMARY OF DEDUCTIONS

22. The summary of deductions are as listed below:

a. As en is relatively weak in inf, and as the ground…….....……..

b. .....

c. .....

OWN COURSES

23. **Course 1**. To hold with whole bde back on:

a. **Advantages**.

(1) .....

(2) .....

b. Disadvantages.

(1) .....

(2) .....

24. **Course 2.** To hold with 2 bn gp fwd.

a. **Advantages**.

(1) .....

(2) .....

b. **Disadvantages.**

(1) .....

(2) .....

SELECTION OF THE BEST COURSE

25. I will adopt Course 2 because ……

PLAN

26. **MISSION**. To hold.....

27. **EXECUTION**.

a. Gen Outline.....

b. A Coy.....

(1) Grouping.....

(2) Tasks.....

MA IBRAHIM
Maj
2ic

Distr: Copy No:

ANNEX B TO
CHAPTER 5

POSSIBLE LAYOUT OF COURSE SECTION OF A SHORTENED APPRECIATION WHERE OWN COURSE ARE CONSIDERED BEFORE ENEMY COURSES

SY CL

OWN COURSES

1. **Course 1**. To mount Left Flanking attack:
   a. **Advantages**.
      (1) .....
      (2) .....
   b. **Disadvantages.**
      (1) …….
      (2) …….

2. **Course 2**. To mount combined Left and Centre attack:
   a. **Advantage**s.
      (1) .....
      (2) .....
   b. **Disadvantages**.
      (1) .....
      (2) .....

EN COURSES

3. **Course A**. To hold.....….....

4. **Comments**. .....…….....

5. **Course B**. To withdraw.....

6. **Comments**. .....…….....

7. **Deductions**

   a. En's most probable course is Course B.

   b. .....……..

SELECTION OF BEST COURSE

8. If en withdraws, then.....

9. I will adopt Course 2 because.....

PLAN

SY CL

ANEX A TO
CHAPTER 6

NOTES ON COMBAT APPRECIATION

1. **Format**.

   a. **Aim.** It is usually the task given by higher Comd. Do not deviate from it.

   b. **Factors**.

      (1) EN - Can incl en courses.

      (2) GROUND.

      (3) TIME AND SPACE.

      (4) ASSESSMENT OF TASKS.

   c. **En Courses**. Select most probable course.

   d. **Own Courses**. Select best course.

   e. **Plan**. This is the design for battle. Fill in the details as you prep your orders using the standard format.

2. **Factors**. Examine the factors objectively. Ask yourself 'so what' until you have all the deductions. Stick to facts and avoid prejudices.

   a. **En**. This is the major factor. Examine every scrap of info.

   b. **Ground**.

      (1) **In the Attack**. Divide the ground into LEFT, CENTRE, RIGHT and consider en dispositions, fields of fire, dead ground, approaches, cover, going, obs and distances. Work from the en posns back to your own. Also consider fire posns, posns for covering fire, best angle in relation to assaulting inf, FUP, FAP, debussing pt and assy area.

(2) **In the Def**. In the def you consider ground of tac importance and approaches. This includes likely en inf and tk approaches. If possible, examine from en viewpoint ground covering these approaches. Wpns posns should also be considered. Do they cover arcs? Are they suitable for gun or GW protection, replens, obs, and reverse slope/defilade? Concealment may take pri over fields of fire, covered approaches to altn or secondary posns? Also consider manoeuvrability to include goings, obs, mines, own def layout and that of neighboring sub-units. Also likely en approaches and FUPs should be considered. Where is en likely to achieve surprise if he appears?