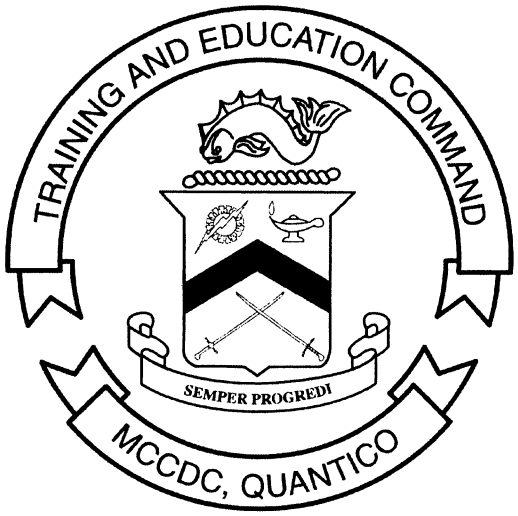
MCI 0365

MARINE CORPS INSTITUTE



ANTIARMOR OPERATIONS

MARINE BARRACKS
WASHINGTON, DC

UNITED STATES MARINE CORPS
MARINE CORPS INSTITUTE
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03.41
10 Jan 98

MCI 03.65, Antiarmor Operations

1. Purpose. MCI course 03.65, Antiarmor Operations, has been published as a part of the Marine Corps continuing education program to provide distance training to all Marines.

2. Scope. MCI course 03.65, Antiarmor Operations, is designed to acquaint Marines with the knowledge and skills necessary for them to participate in the modern battlefield. Familiarization with Armor identification and Antiarmor Operations greatly enhances the Marines effectiveness in the modern battlefield.

3. Applicability. This course is intended for instructional purposes only. It is designed for use by Marines in the ranks of Pvt - Sgt who are assigned in the infantry occupational field.

4. Recommendations. Comments and recommendations on the contents of the course are invited and will aid in subsequent course revisions. Please complete the course evaluation questionnaire located at the end of the text and return it to:

Director (CDD-4)
Marine Corps Institute
Washington Navy Yard
912 Poor Street SE
Washington, DC 20391-5680

G. White
Lieutenant Colonel, U.S. Marine Corps
Deputy Director

ERRATUM CHANGE PAGE TO COURSE MATERIAL

1. Purpose. The purpose of this change is to give the student current instructions regarding the review lesson examination.

2. Action. Change the instructions found on page R-1 of this book to read as follows:

"The purpose of the review lesson examination is to prepare you for your final examination. We recommend that you try to complete your review lesson examination without referring to the text, but for those items (questions) you are unsure of, restudy the text. When you finish your review lesson and are satisfied with your responses, check your responses against the answers provided at the end of this review lesson examination.

Select the ONE answer that BEST completes the statement or that answers the item. For multiple choice items, circle your response. For matching items, place the letter of your response in the space provided."

3. This page is to be filed directly behind the Promulgation Letter of this course.

ANTIARMOR OPERATIONS
CONTENTS

CONTENTS (cont)

Student Information

Number and Title	MCI 0365 ANTIARMOR OPERATIONS
Study Hours	12
Course Materials	Text
Review Agency	N/A
Reserve Retirement Credits (RRC)	4
ACE	Not applicable to civilian training/education
Assistance	For administrative assistance, have your training officer or NCO log on to the MCI home page at www.mci.usmc.mil. Marines CONUS may call toll free 1-800-MCI-USMC. Marines worldwide may call commercial (202) 685-7596 or DSN 325-7596.

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Study Guide

Congratulations

Congratulations on your enrollment in a distance learning course from the Distance Learning and Technologies Department (DLTD) of the Marine Corps Institute (MCI). Since 1920, the Marine Corps Institute has been helping tens of thousands of hard-charging Marines, like you, improve their technical job performance skills through distance training. By enrolling in this course, you have shown a desire to improve the skills you have and master new skills to enhance your job performance. The distance learning course you have chosen, MCI 03.65, *Antiarmor Operations,* prepares Marines for the basics of antiarmor tactics.

Your Personal Characteristics

- **YOU ARE PROPERLY MOTIVATED.** You have made a positive decision to get training on your own. Self-motivation is perhaps the most important force in learning or achieving anything. Doing whatever is necessary to learn is motivation. You have it!

- **YOU SEEK TO IMPROVE YOURSELF.** You are enrolled to improve those skills you already possess, and to learn new skills. When you improve yourself, you improve the Corps!

- **YOU HAVE THE INITIATIVE TO ACT.** By acting on your own, you have shown you are a self-starter, willing to reach out for opportunities to learn and grow.

- **YOU ACCEPT CHALLENGES.** You have self-confidence and believe in your ability to acquire knowledge and skills. You have the self-confidence to set goals and the ability to achieve them, enabling you to meet every challenge.

- **YOU ARE ABLE TO SET AND ACCOMPLISH PRACTICAL GOALS.** You are willing to commit time, effort, and the resources necessary to set and accomplish your goals. These professional traits will help you successfully complete this distance training course.

Continued on next page

Beginning Your Course

Before you actually begin this course of study, read the student information page. If you find any course materials missing, notify your training officer or training NCO. If you have all the required materials, you are ready to begin.

To begin your course of study, familiarize yourself with the structure of the course text. One way to do this is to read the table of contents. Notice the table of contents covers specific areas of study and the order in which they are presented. You will find the text divided into several study units. Each study unit is comprised of two or more lessons, lesson exercises, and finally, a study unit exercise.

Leafing Through the Text

Leaf through the text and look at the course. Read a few lesson exercise questions to get an idea of the type of material in the course. If the course has additional study aids, such as a handbook or plotting board, familiarize yourself with them.

The First Study Unit

Turn to the first page of study unit 1. On this page you will find an introduction to the study unit and generally the first study unit lesson. Study unit lessons contain learning objectives, lesson text, and exercises.

Reading the Learning Objectives

Learning objectives describe in concise terms what the successful learner, you, will be able to do as a result of mastering the content of the lesson text. Read the objectives for each lesson and then read the lesson text. As you read the lesson text, make notes on the points you feel are important.

Completing the Exercises

To determine your mastery of the learning objectives and text, complete the exercises developed for you. Exercises are located at the end of each lesson, and at the end of each study unit. Without referring to the text, complete the exercise questions and then check your responses against those provided.

Continued on next page

Continuing to March

Continue on to the next lesson, repeating the above process until you have completed all lessons in the study unit. Follow the same procedures for each study unit in the course.

Preparing for the Final Exam

To prepare for your final exam, you must review what you learned in the course. The following suggestions will help make the review interesting and challenging.

- **CHALLENGE YOURSELF.** Try to recall the entire learning sequence without referring to the text. Can you do it? Now look back at the text to see if you have left anything out. This review should be interesting. Undoubtedly, you'll find you were not able to recall everything. But with a little effort, you'll be able to recall a great deal of the information.

- **USE UNUSED MINUTES.** Use your spare moments to review. Read your notes or a part of a study unit, rework exercise items, review again; you can do many of these things during the unused minutes of every day.

- **APPLY WHAT YOU HAVE LEARNED.** It is always best to use the skill or knowledge you've learned as soon as possible. If it isn't possible to actually use the skill or knowledge, at least try to imagine a situation in which you would apply this learning. For example make up and solve your own problems. Or, better still, make up and solve problems that use most of the elements of a study unit.

- **USE THE "SHAKEDOWN CRUISE" TECHNIQUE.** Ask another Marine to lend a hand by asking you questions about the course. Choose a particular study unit and let your buddy "fire away." This technique can be interesting and challenging for both of you!

- **MAKE REVIEWS FUN AND BENEFICIAL.** Reviews are good habits that enhance learning. They don't have to be long and tedious. In fact, some learners find short reviews conducted more often prove more beneficial.

Continued on next page

Tackling the Final Exam

When you have completed your study of the course material and are confident with the results attained on your study unit exercises, take the sealed envelope marked **"FINAL EXAM"** to your unit training NCO or training officer. Your training NCO or officer will administer the final examination and return the examination and the answer sheet to MCI for grading. Before taking your final examination, read the directions on the DP-37 answer sheet carefully.

Completing Your Course

The sooner you complete your course, the sooner you can better yourself by applying what you've learned! HOWEVER--you do have 2 years from the date of enrollment to complete this course.

Graduating!

As a graduate of this distance education course and as a dedicated Marine, your job performance skills will improve, benefiting you, your unit, and the Marine Corps.

Semper Fidelis!

STUDY UNIT 1

MODERN BATTLEFIELD

STUDY UNIT OBJECTIVE: UPON SUCCESSFUL COMPLETION OF THIS STUDY UNIT, YOU WILL IDENTIFY THE DOMINANT CHARACTERISTICS OF A MODERN BATTLEFIELD, WEAKNESSES OF THE MECHANIZED THREAT, CHARACTERISTICS OF WEAPONS THAT WILL BE USED ON THAT BATTLEFIELD, THE TYPES OF ARMORED VEHICLES BY CATEGORY AND NAME THAT ARE EMPLOYED BY THREAT AND WESTERN FORCES ON THE MODERN BATTLEFIELD, AND THE DEFINITION OF THE TERM COMBINED ARMS FORCES.

Work Unit 1-1. CHARACTERISTICS OF THE MODERN BATTLEFIELD

LIST THE CHARACTERISTICS OF THE MODERN BATTLEFIELD

The modern battle is dominated by three characteristics. These characteristics are:

- -Intense fire power
- -Sophistication and killing power of modern weapons
- -Probable short duration of the conflict

The enemy you may fight on the battlefield of the future is well-trained and equipped to perform his duties. Because of his training and the ability of his government to have massive amounts of personnel and weapons at the point of decision, the battlefield of the future will be of high intensity by nature.

Because of the advances in technology since World War II, weapons and weapons systems have advanced to a point where their accuracy and destructiveness will dominate the modern battlefield. Battles of the future will probably be short in duration because of the planned intensity, accuracy, and killing power of weapons and weapons systems. A good example is the six-day Yom Kippur War (Egypt and Israel, 1973) which has given us an idea of what to expect on the battlefield of the future.

EXERCISE: Answer the following questions and then check your answers against those located at the end of this study unit.

1. List the three dominant characteristics of the modern battlefield.

   a. _____

   b. _____

   c. _____

Work Unit 1-2. CHARACTERISTICS OF MODERN WEAPONS AND WEAPON SYSTEMS.

LIST THE THREE MAJOR CHARACTERISTICS OF WEAPONS AND WEAPON SYSTEMS ON THE MODERN BATTLEFIELD

Weapons and weapon systems of most armies of the world are characterized by their increased maximum effective range, their greater accuracy, and their destructiveness. Because of advances in technology, modern weapons and weapons systems have become three or four times as effective as those used during past conflicts. For example, an M4A1 Sherman tank (WWII) with a 75/40 gun was 50% effective to a range of 500 meters while our current tank, the M60A1 with a 105/LZ gun, is 50% effective to a range of 2,000 meters. Along with the sophistication of weapons guidance and propellant components came the increase in their destructive capability. With the advent of explosives like octogol, warheads on weapons can all but guarantee a kill when a strike is made on a target.

EXERCISE: Answer the following questions and then check your answer(s) against those located at the end of this study unit.

1. List three major characteristics of weapons and weapon systems on the modern battlefield.

   a. _____

   b. _____

   c. _____

Work Unit 1-3. THE THREAT AND WEAKNESSES OF MECHANIZED THREAT FORCES.

DEFINE THE TERM THREAT.

LIST THE WEAKNESSES OF MECHANIZED THREAT FORCES.

NOTE: Throughout this course, all doctrine, weapons, equipment, vehicles and tactics of Soviet and Warsaw Pact nations will be referred to by the word "threat".

The threat's mechanized forces have several exploitable weaknesses and vulnerabilities:

- -Non-standardization of equipment resulting in logistic problems. For example, each new weapon system is more technically advanced with a larger caliber main gun. The T54/55 (100mm main gun), T62 (115mm), and the T72 (125mm main gun) tanks are in use today. Obviously, rounds are not interchangeable.

- -Minimum depression of the main gun.

- -Small amount of main gun rounds carried on board with a limited variety.

The latest versions of the threat tanks are much smaller than the U.S. M-60A1. The crew is very cramped and freedom of movement is severely restricted. This most likely causes crew fatigue.

The BMP is probably one of the world's best armored personnel carriers; but it has some shortcomings. Its main gun does not have a stabilizer and can't shoot accurately while on the move. The Sagger antitank guided missile mounted on the BMP leaves the launcher armed, but the operator must acquire the target after firing and guide it to the target by remote control. Because of this the operator will have problems hitting targets at ranges less than 1000 meters. The Sagger can not be effectively employed at night without illumination.

The tank commander is the only crew member trained and authorized to use the tank radio except in emergencies. Dismounted infantry squads have no radios. Infantry platoon leaders will have a radio but it is limited in range.

The threat's key to successful mechanized offensiveness is quickly gaining momentum in the attack and maintaining that momentum at practically any cost. Strong flank protection is not employed with the feeling that speed and aggressiveness will provide protection enough. Threat mechanized forces favor mass, speed, and shock effect over fire and maneuver as a means of developing combat power. This is a major shortcoming because their flanks are exposed. A unit that attacks the threat mechanized flanks should be able to negate their advantages and numbers.

EXERCISE: Answer the following questions and then check your answers against those located at the end of this study unit.

1. Define the term threat.

   _____

   _____

2. List weaknesses of the mechanized threat.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

g. _____

h. _____

Work Unit 1-4. ARMORED VEHICLES

DEFINE THE FOLLOWING ARMORED VEHICLES: TANK, MECHANIZED INFANTRY COMBAT VEHICLES, ASSAULT GUN, ARMORED CAR, AND SELF-PROPELLED ARTILLERY.

Armored fighting vehicles of the world are broken down into five categories by their purpose. These categories are tanks, mechanized infantry combat vehicles, assault guns, armored cars, and self-propelled artillery.

A tank is defined as a full-tracked, enclosed armored fighting vehicle that usually mounts a cannon and automatic weapons. It has excellent cross-country mobility, armor protection, firepower, and the ability for shock action.

A mechanized infantry combat vehicle is defined as a lightly armored, full-tracked, infantry assault carrier. It may mount a cannon and/or automatic weapon(s).

An assault gun is a vehicle very similar to a tank but it lacks a turret. Assault guns have all the other characteristics and weapons of a tank. Assault guns are usually lighter than a tank in weight with a smaller caliber main gun. Their use varies from support of tanks to anti-armor duty.

An armored car is defined as a lightly armored, wheeled motor vehicle usually carrying an automatic and/or light anti-air (anti-armor) weapon. Its use is primarily for scouting and reconnaissance.

Self-propelled artillery is defined as fully tracked armored vehicles mounting a field gun or howitzer. Its purpose is to provide indirect fire support to the combined arms team.

EXERCISE: Answer the following questions and then check your answers against those listed at the end of this study unit.

1. Write the definition of the following terms:

a. Tank _____

_____

b. Mechanized infantry combat vehicle _____

_____

c. Assault gun _____

_____

d. Armored car _____

_____

e. Self-propelled artillery _____

_____

Work Unit 1-5. ARMORED VEHICLES OF THREAT FORCES

LIST THE NAMES OF THE FOLLOWING ARMORED VEHICLES USED BY THE THREAT FORCES: THREE TANKS, ONE INFANTRY COMBAT VEHICLE, TWO ASSAULT GUNS, TWO ARMORED CARS, AND TWO SELF-PROPELLED ARTILLERY PIECES.

Threat forces use the following armored vehicles. While this list is not all inclusive, it will provide you with a useful list of the more common armored vehicles used by threat forces. Threat forces use the T-62 (fig 1-1) as the primary main battle tank. Two more modern main battle tanks are in production, the T-72 (fig 1-2), and the T-80. However, they are not yet available in quantities desired by the threat forces. Some older tanks such as the T-34/85 (fig 1-3) and the T-54/55 (fig 1-4) can be found in some units.

Most active front line threat force army units use the BMP (fig 1-5) as an infantry combat vehicle. The airborne and naval infantry forces (Russian Marines) use a smaller version of the BMP called the BMD (fig 1-6). Again, some army and other allied units may be mounted in older vehicles such as the BTR-50P (PK) (fig 1-7) or the BTR-152 (fig 1-8).

Extensive use of assault guns by threat forces has diminished since World War II. Today the three most common assault guns used by opposing forces are the air droppable ASU-57 (fig 1-9), the air-transportable ASU-85 (fig 1-10), and the SU-100 (fig 1-11). The ASU-57 is used by airborne and naval infantry and the SU-100 is largely exported to allied armies.

The armored car used by threat forces is the BRDM and BRDM-2 (fig 1-12 and 1-13). While the BRDM is basically an armored reconnaissance vehicle, it can mount any of the current Soviet antitank guided missiles and be used in a cavalry role. The BRDM can be used for special duty, such as an NBC/monitor detection vehicle or an amphibious vehicle.

The self-propelled artillery pieces used by the threat forces are the M1973 and the M1974 (figs 1-14 and 1-15). The M1973 comes in two calibers: 120mm and 152mm; while the M1974 comes in 122mm only. The M1973 is not avaiable in large quantities but is becoming more common in inventories as time goes by.

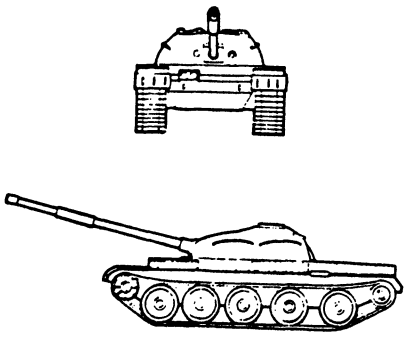


Fig 1-1. T-62

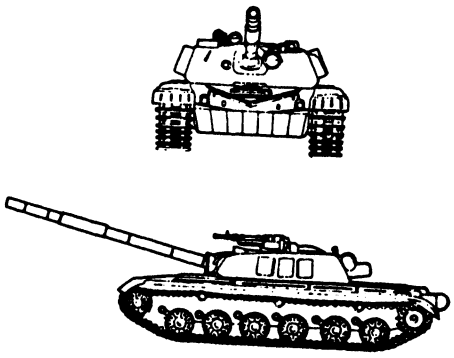


Fig 1-2. T-72

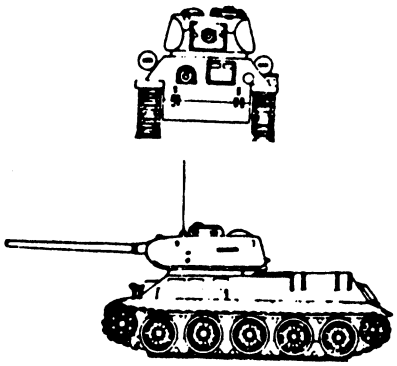


Fig 1-3. T-34/85

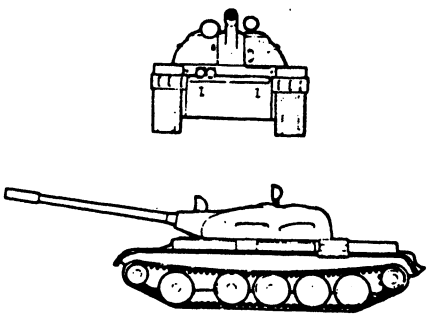


Fig 1-4. T-54/55

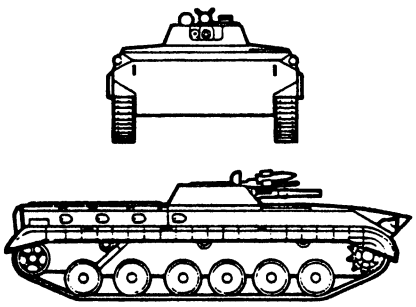


Fig 1-5. BMP

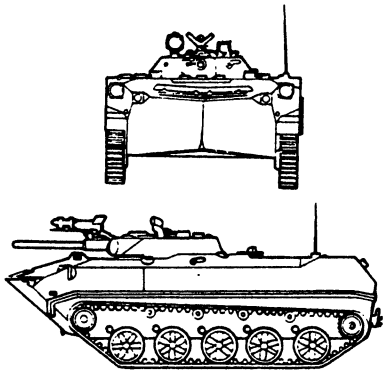


Fig 1-6. BMD

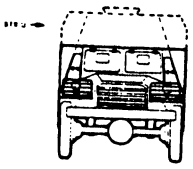


Fig 1-7. BTR-50A(PK)

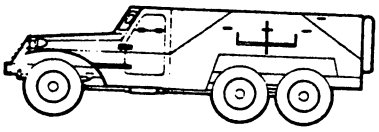


Fig 1-8. BTR-152

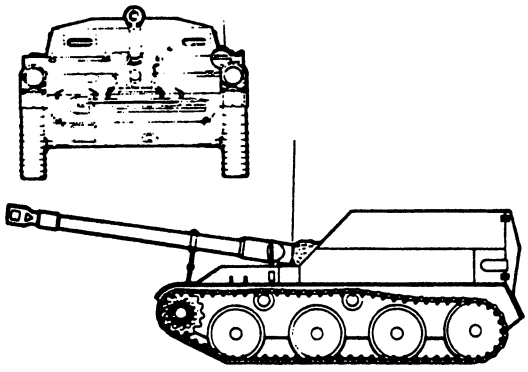


Fig 1-9. ASU-57

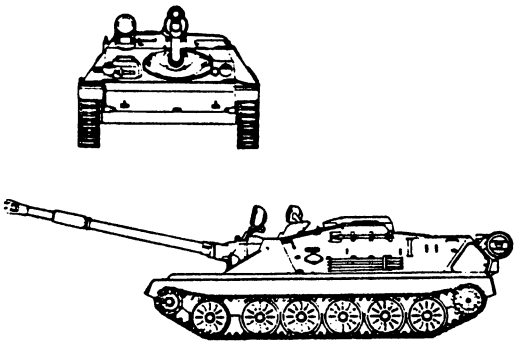


Fig 1-10. ASU-85

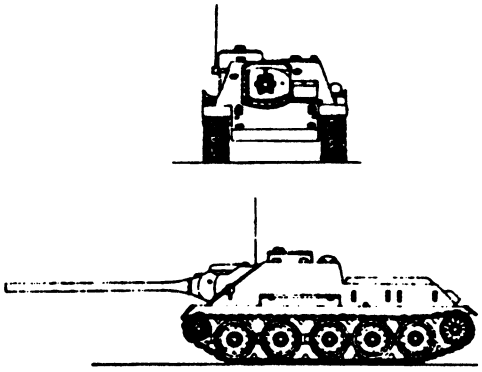


Fig 1-11. SU-100

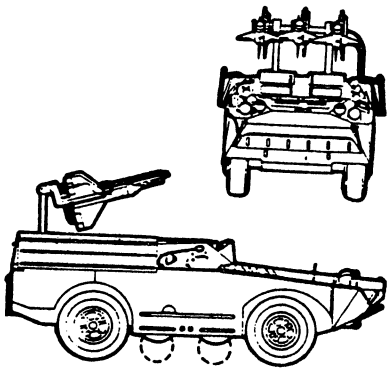


Fig 1-12 BRDM

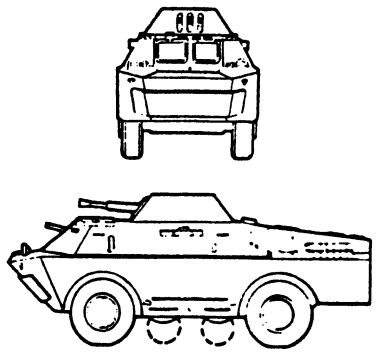


Fig 1-13. BRDM-2

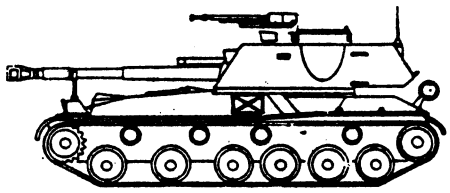


Fig 1-14. M1973

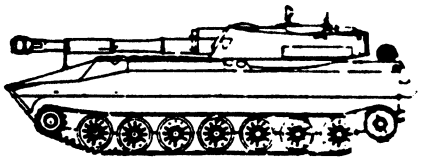


Fig 1-15. M1974

EXERCISE: Answer the following question and then check your answers against those listed at the end of this study unit.

From the vehicles covered in this work unit, list below the names of the armored vehicles used by threat forces.

1. _____ Tank
2. _____ Tank
3. _____ Tank
4. _____ Infantry combat vehicle
5. _____ Assault gun
6. _____ Asault gun
7. _____ Armored car
8. _____ Armored car
9. _____ Self-propelled artillery
10. _____ Self-propelled artillery

Work Unit 1-6. ARMORED VEHICLES OF THE FREE WORLD

LIST SEVEN U. S. TANKS, THREE ENGLISH TANKS, TWO FRENCH TANKS, AND ONE WEST GERMAN TANK.

Before a list of armored vehicles used by U.S. and Western forces can be presented, it must be said that standardization of equipment seen in the threat forces inventory has not been achieved in all areas. While some equipment such as guns and ammunition are standardized, other areas such as armored vehicles are not. Again, this list of armored vehicles is not all-inclusive in nature, but it provides a list of the more common armored vehicles employed by various Western nations.

Four countries supply the majority of armored vehicles to free world nations. They are Great Britain, France, West Germany, and the United States. Four allied countries supply the majority of armored vehicles to 2d and 3d world nations. Great Britain builds, uses, and exports the Chieftain (fig 1-16) and Centurion (fig 1-17) main battle tanks. The FV101 Scorpion (fig 1-18) is a light tank. By design, however, its primary uses are as a cavalry vehicle and as a module for other armored vehicles.

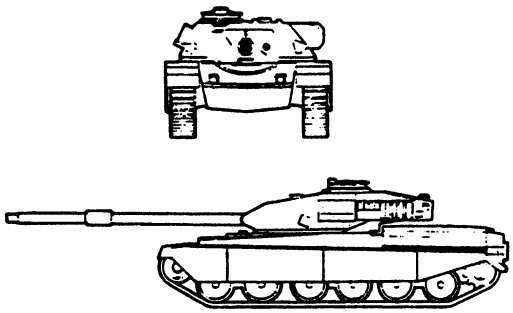


Fig 1-16. Chieftain.

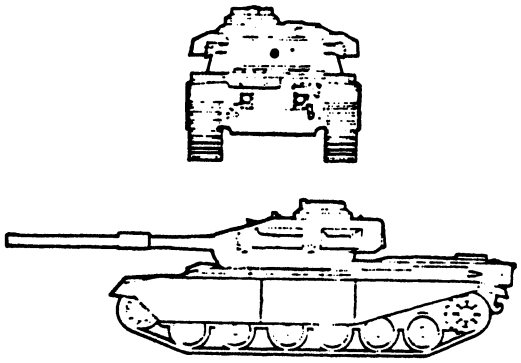


Fig 1-17. Centurion.

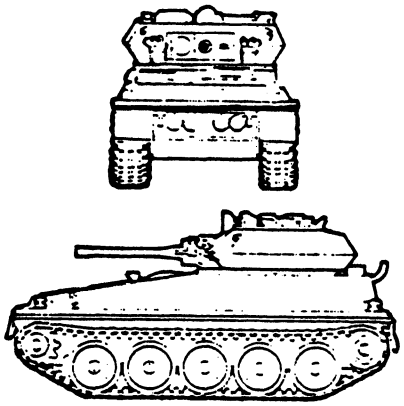


Fig 1-18. Scorpion.

France uses and exports the AMX-13 (fig 1-19) and AMX 30 (fig 1-20) main battle tanks. It should be noted that the AMX-13 can be fitted with four SS-11 antitank missiles (fig 1-21). The SS-11 was the first deployed antitank wire-guided missile system. The AMX-13 also serves as a module for a variety of armored vehicles.

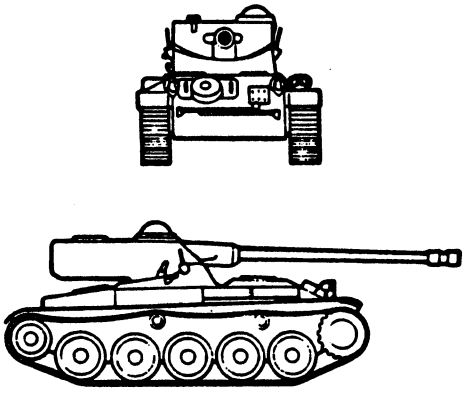


Fig 1-19. AMX-13.

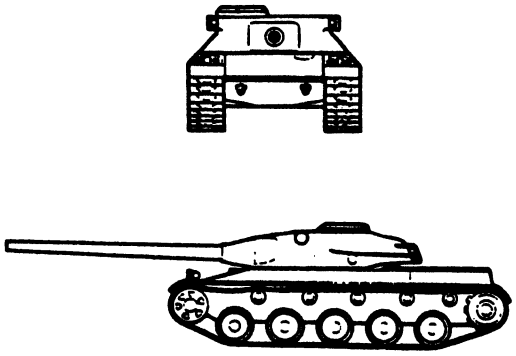


Fig 1-20. AMX-30.

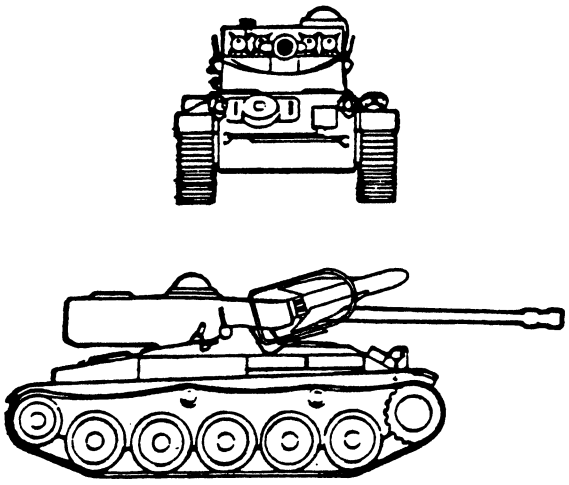


Fig 1-21. AMX-13 with SS-11 missiles.

West Germany deploys the Leopard (fig 1-22) as its main battle tank..

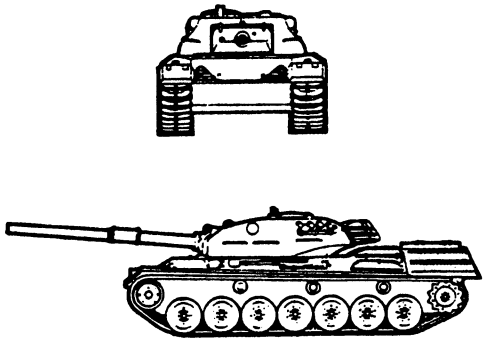


FIg 1-22. Leopard.

The single largest producer and exporter of arms in the Western World is the United States. The United States manufactures, uses, and exports a variety of main battle tanks. They are the M48 (fig 1-23), M48A3 (fig 1-24), M60 (fig 1-25), M60A1 (fig 1-26), M60A2 (fig 1-27), and the M1 Creighton Abrahms (fig 1-28). The M551 Sheridan (fig 1-29) (which is being phased out of use by the United States) mounts the 152mm gun tube, which fires the Shillelagh missile.

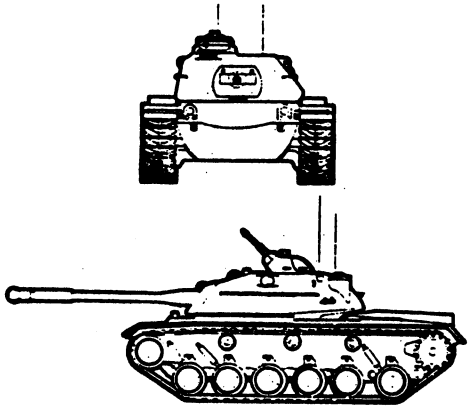


Fig 1-23. M48.

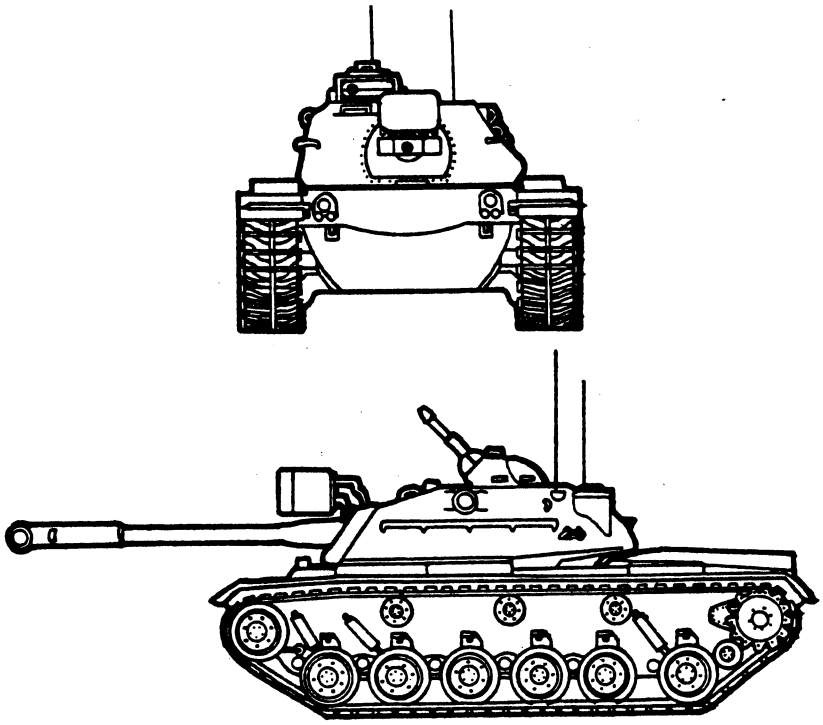


Fig 1-24. M48A3

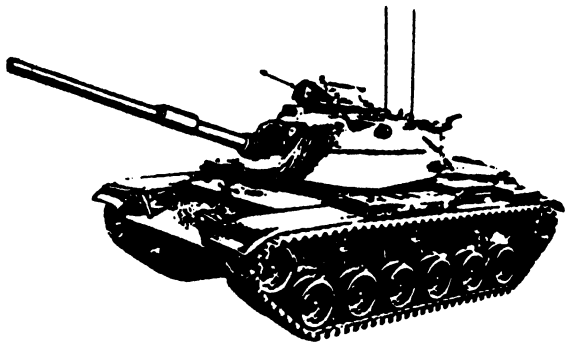


Fig 1-25. M60.

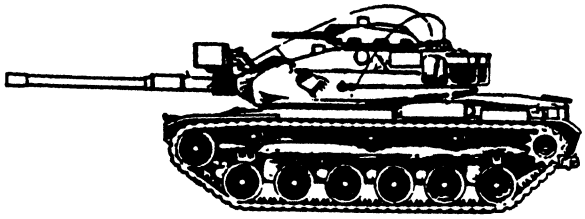


Fig 1-26. M60A1.

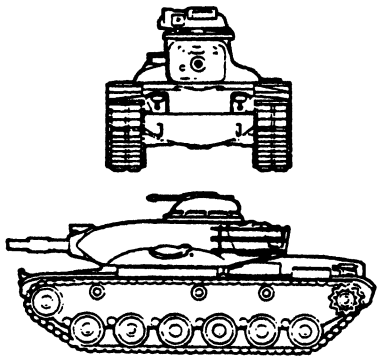


Fig 1-27. M60A2.

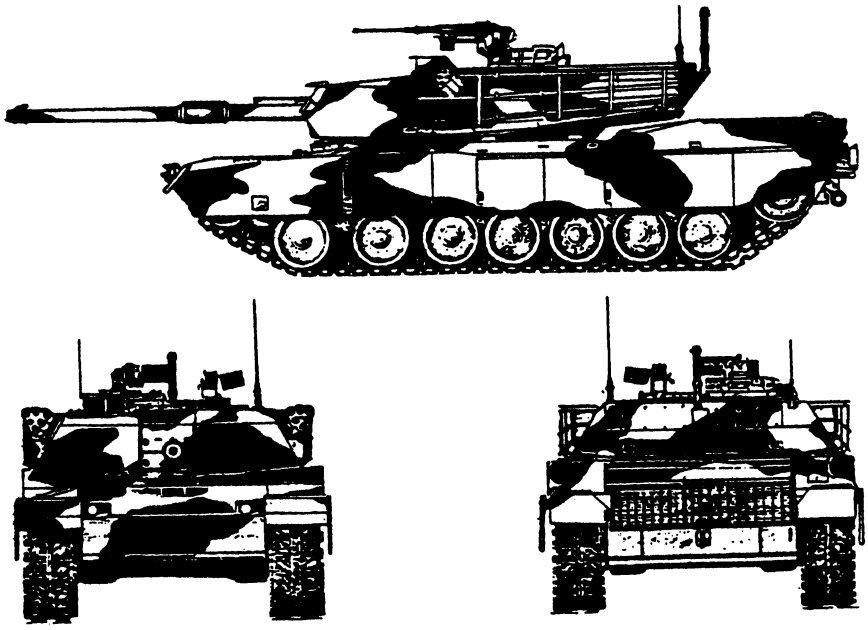


Fig 1-28. M1.

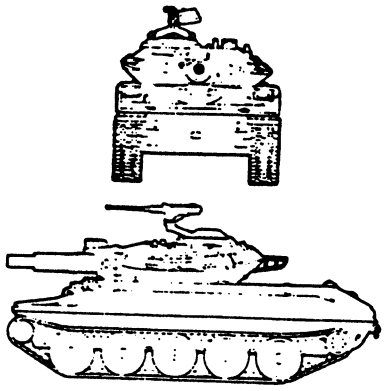


Fig 1-29. M551.

The aforementioned tanks are primarily seen in use by NATO forces as well as being exported to other allied nations. To demonstrate the diversity of armored vehicles among allied nations, outside of NATO, the tanks of Israel, Korea, and Japan will be mentioned.

Israel

The nation of Israel uses such a wide variety of main battle tanks that a comprehensive list is impossible to draw up. Some tanks employed by Israel are the Centurion (fig 1-17), Chieftain (fig 1-16), the M-48 (fig 1-23), M60 (fig 1-25), M60A1 (fig 1-26), M60A2 (fig 1-27), and T54/55 (fig 1-4). The Israeli self-defense force is known for its ability to use any tank they can buy or capture. An example of this is their use of the WWII tank M4 Sherman (fig 1-30) and the use of captured T54/55's.

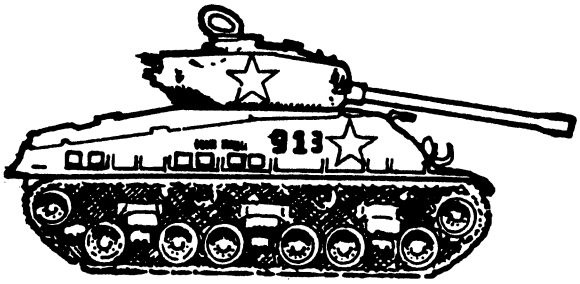


Fig 1-30. M4 Sherman.

Korea

Korea, primarily supplied by the United States, uses the M47 (fig 1-31), M48 (fig 1-23), and M60 series (fig 1-25 and 1-26) tanks.

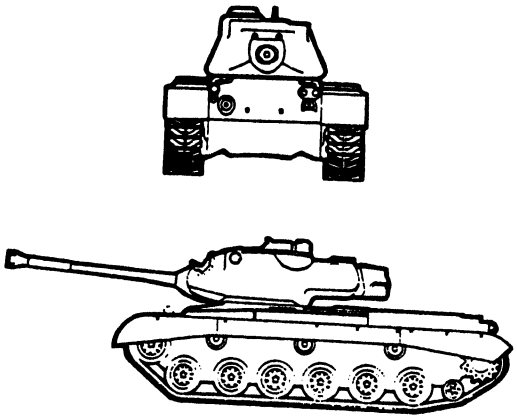


Fig 1-31. M47.

Japan

In recent years Japan has begun to build its own family of main battle tanks rather than to rely on the United States for armor. The Japanese Self-Defense Force armored units employ the Type 61 (fig 1-32) and Type 74 (fig 1-33) tanks.

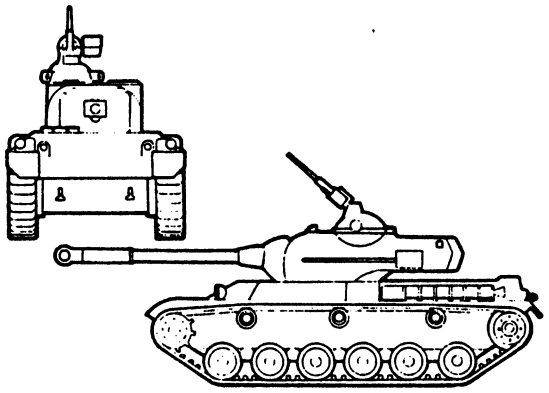


Fig 1-32. Type 61 Japan.

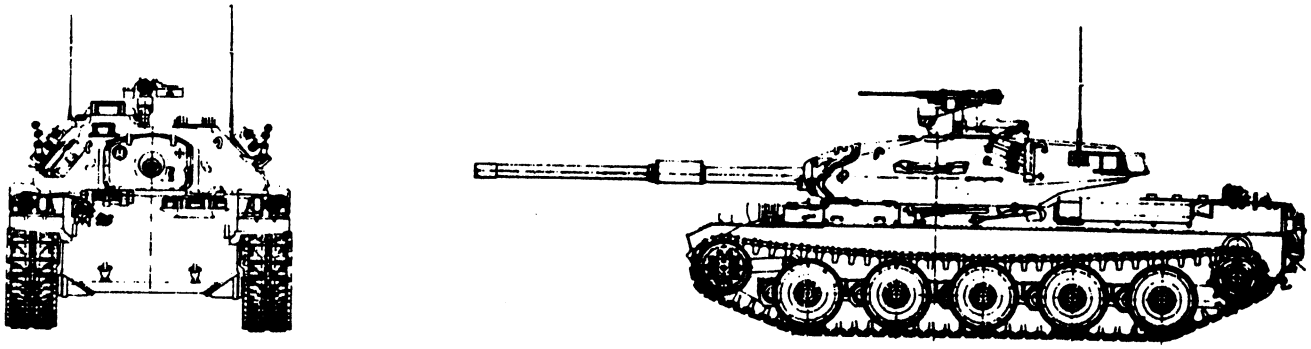


Fig 1-33. Type 74 Japan.

True mechanized infantry combat vehicles (MICV's) such as the Type 73 (fig 1-34) from Japan, and the M2 (fig 1-35) and M3 (fig 1-36) from the United States are not fielded in large quantities by allied (Western) nations. Most MICV's of the Western World are either under development or deployed in small quantities. In the interim, infantry fighting vehicles (IFV's) and armored personnel carriers (APC's) such as the U.S. M113 (fig 1-37), LVTP-7 (fig 1-38) and the English FV432 (fig 1-39) are used.

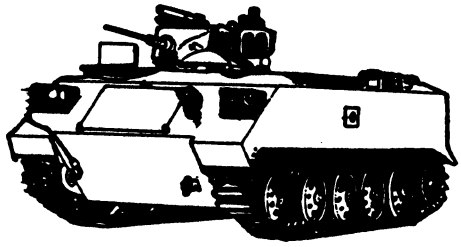


Fig 1-34. Type 73 Japan.

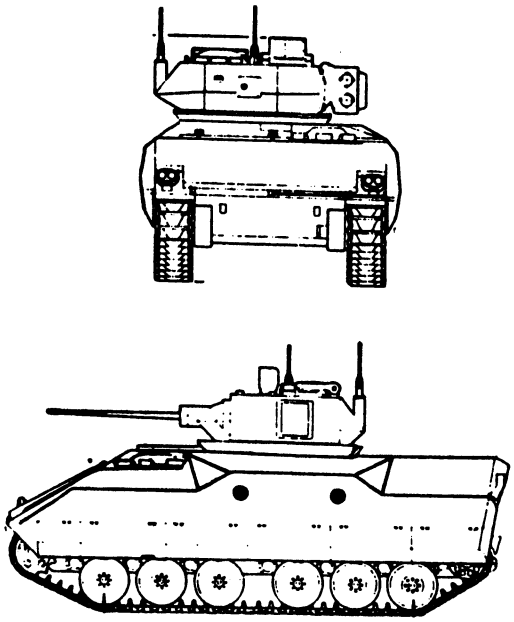


Fig 1-35. M2 U.S.

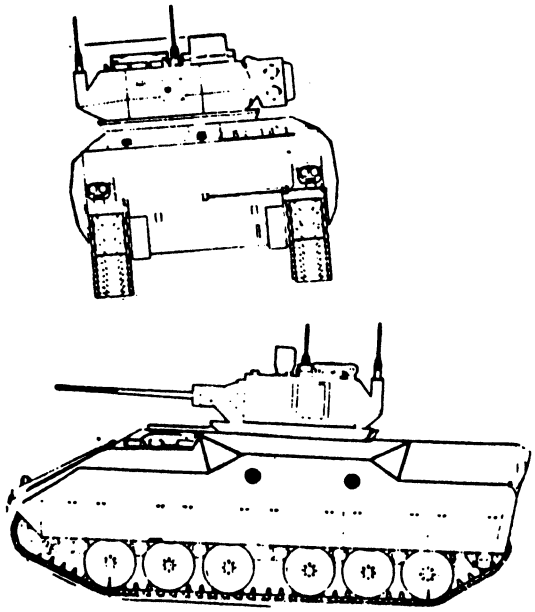


Fig 1-36. M3 U.S.

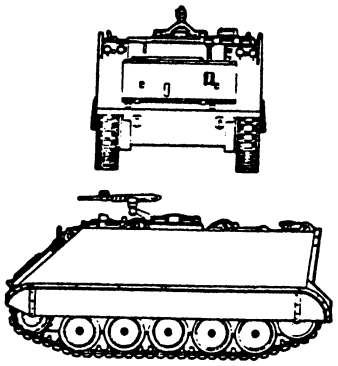


Fig 1-37. M113 APC.

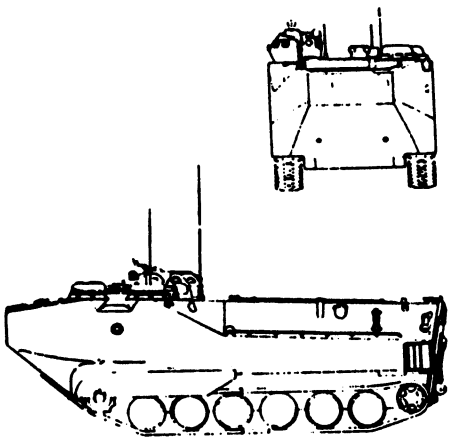


Fig 1-38. LVTP-7.

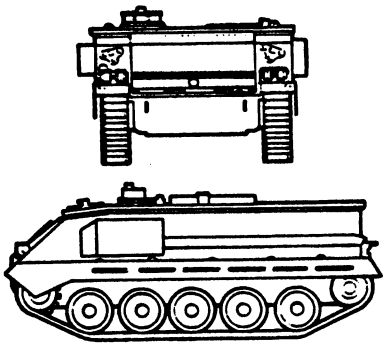


Fig 1-39. FV432 British.

The single true assault gun deployed by an allied nation is the West German JP24-5 (Kanone) (fig 1-40).

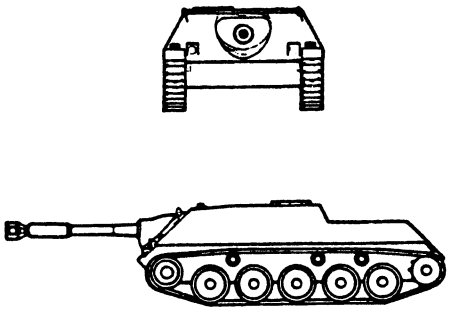


Fig 1-40. JP24-5 Kanone.

Armored cars are not used extensively by allied Western nations. Although they do exist, they are limited in number and in the role they play.

Most of the self-propelled artillery currently used by the Western nations is produced and exported by the United States. The United States produces the M107 (fig 1-41), the M109 (fig 1-42), and M110 (fig 1-43). Other prominent self-propelled artillery pieces by country are the FV433 (fig 1-44) from Great Britian, the AMX 105 (fig 1-45), and AMX GCT (fig 1-46) from France, the BandKanon 1A (fig 1-47) from Sweden and the Israeli L33 (fig 1-48).

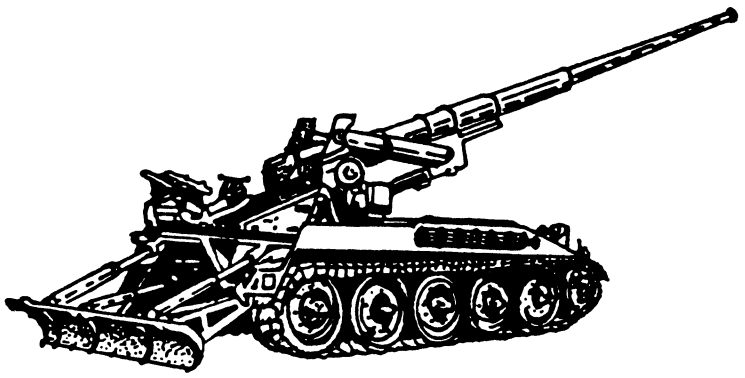


Fig 1-41. M107, United States.

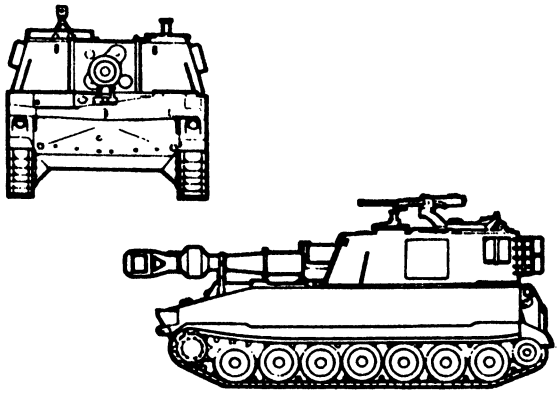


Fig 1-42. M109, United States.

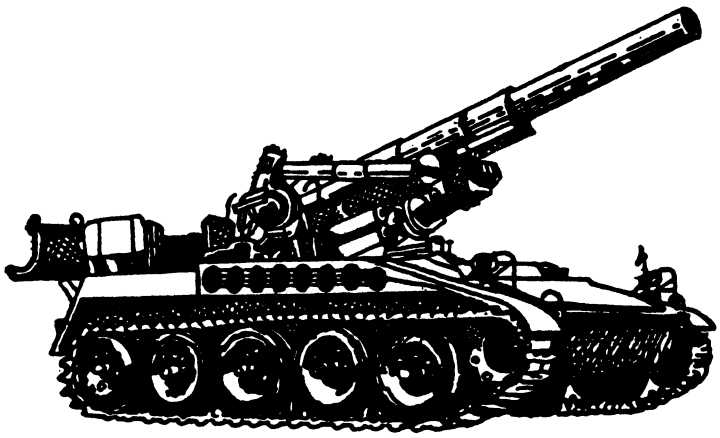


Fig 1-43. M110, United States.

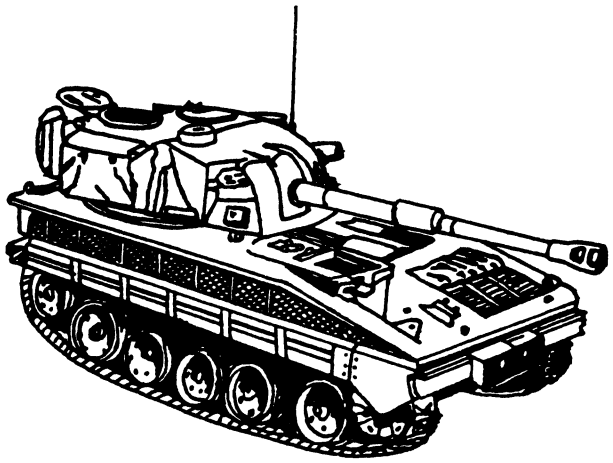


Fig 1-44. FV433, Great Britian.

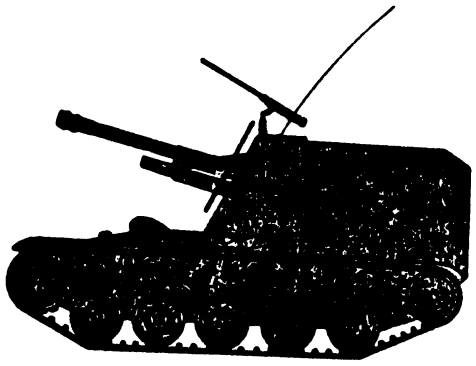


Fig 1-45. AMX 105 France.

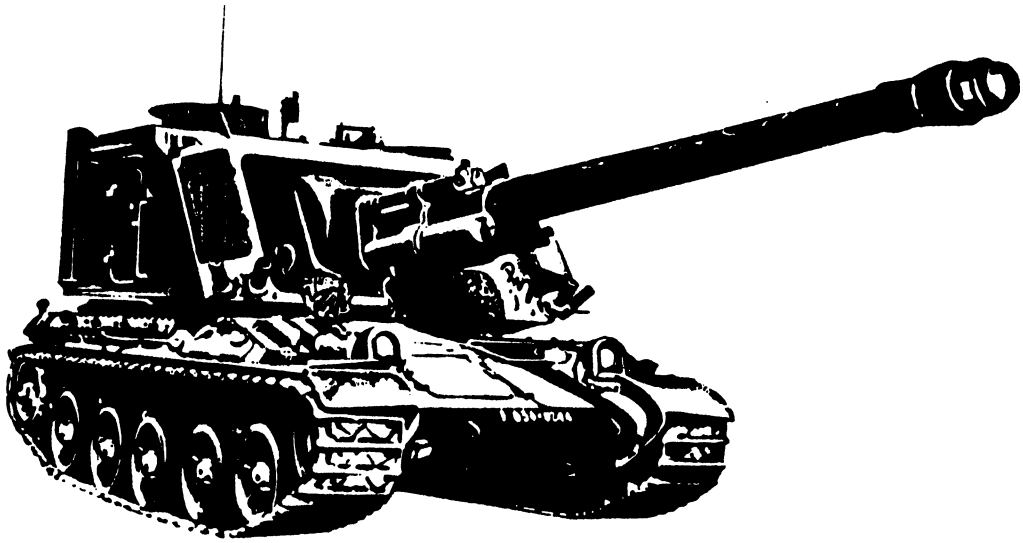


Fig 1-46. AMX GCT, France.

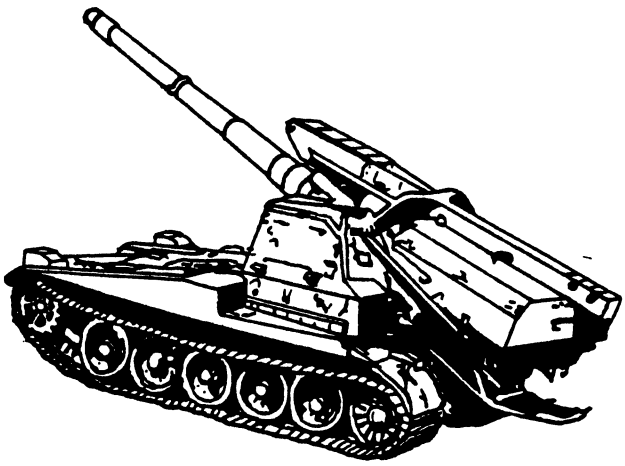


Fig 1-47. BandKanon 1A, Sweden.

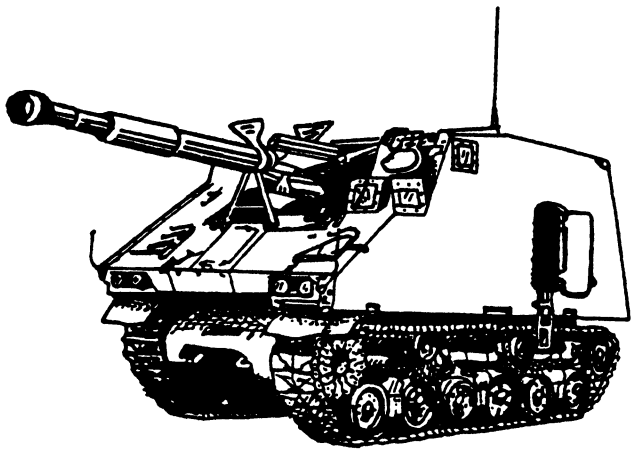


Fig 1-48. L33, Israel.

EXERCISE: Answer the following questions and then check your answers against those listed at the end of this study unit.

1. List five U. S. tanks

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

2. List three combat British tanks.

   a. _____

   b. _____

   c. _____

3. List one West German tank.

   _____

4. List two French tanks.

   a. _____

   b. _____

5. What allied (NATO) country produces the only true assault gun?

   _____

Work Unit 1-7. COMBINED ARMS

DEFINE COMBINED ARMS FORCES

Often, mechanized or motorized ground forces with a large concentration of armored vehicles are mistakenly identified as combined arms forces. Combined arms forces are defined as forces with the organization and equipment to conduct offensive operations, making full coordinated use of all weapons and weapons systems of the force. Combined arms forces contain a balance of armor, infantry, mobility assets, artillery, and air support. Examples of combined arms forces are the Marine Amphibious Unit (MAU) (fig 1-52) and the Soviet motorized rifle battalion (fig 1-53).

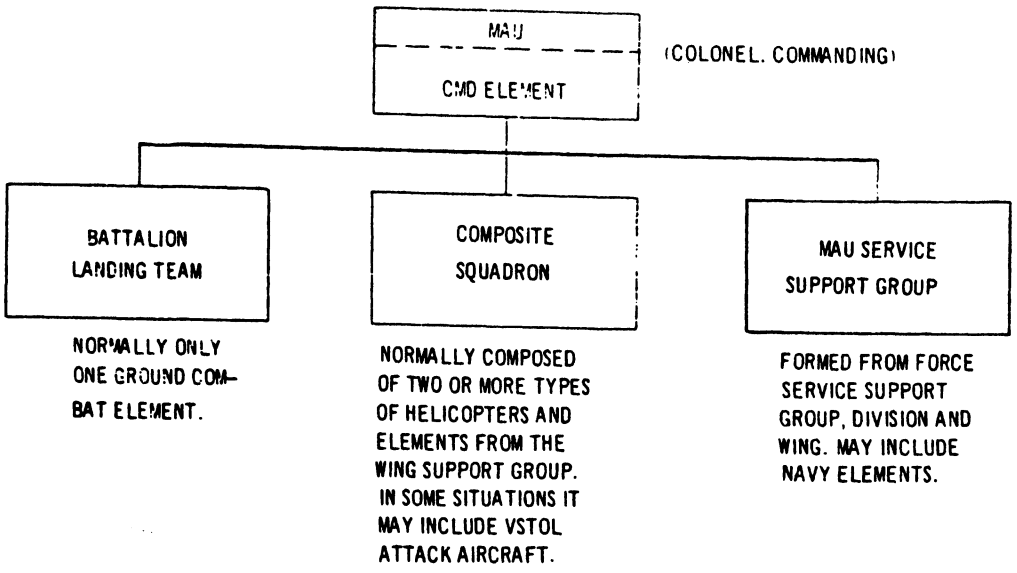


Fig 1-52. Marine Amphibious Unit (MAU).

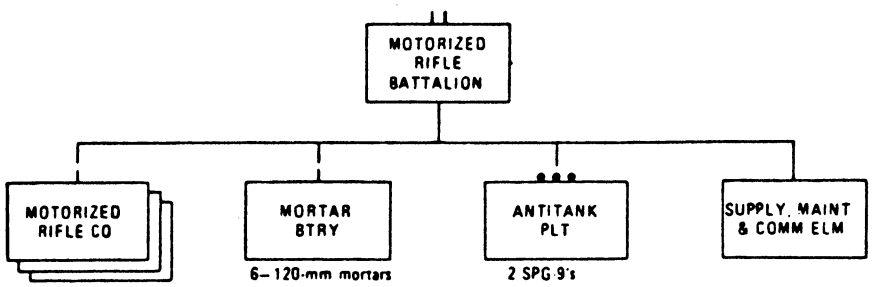


Fig 1-53. Soviet Motorized Rifle Battalion.

Another combined arms force is the Mechanized Combined Arms Task Force (MCATF) (Fig 1-54). It is used when the mission and area of operations will support the use of tanks, a mechanized force formed around tanks, infantry (mounted in assault amphibian vehicles (AAV's) and artillery. Ideally, then, a Marine mechanized force should be a task organized mechanized combined arms force employed when the mission and area of operations support the use of tanks.

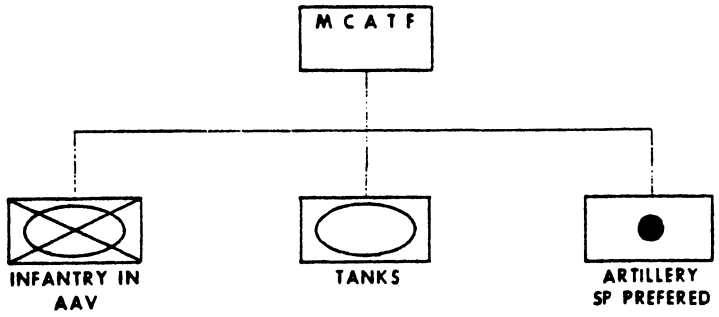


Fig 1-54. Marine Mechanized Combined Arms Task Force.

EXERCISE: Answer the following question and check your response against the one listed at the end of this study unit.

1. Write the definition of a combined arms force.

_____

_____

_____

_____

Answers to Study Unit #1 Exercises.

Work Unit 1-1.

1. Intense fire power
2. Sophistication and killing power of modern weapons and weapons systems
3. Short duration of the conflict

Work Unit 1-2.

1. Extreme maximum effective range
2. Greater accuracy
3. Increased destructiveness

Work Unit 1-3.

1. Soviet and Warsaw Pact forces.
2. (Give credit for similar wording)
   a. Non-standardization of equipment
   b. Minimum depression of main gun
   c. Small amount of main gun rounds carried in each tank
   d. Limited variety of main gun rounds
   e. Crew fatigue due to limited freedom of movement inside of the T-62 and T-72
   f. The BMP can't accurately shoot on the move
   g. Less radio useability
   h. Mechanized forces are vulnerable to the flank

Work Unit 1-4.

1. a. A full-tracked enclosed armored fighting vehicle that usually mounts a cannon and automatic weapons.
   b. A lightly armored, full-tracked infantry assault carrier.
   c. Similar to a tank but lacks a turret.
   d. A lightly armored wheeled vehicle.
   e. A fully tracked armored vehicle mounting a fieldgun or howitzer.

Work Unit 1-5.

1. Any one of these five: T-62, T-72, T-80, T-34/85, or T-54/55.
2. Any one of these five: T-62, T-72, T-80, T-34/85, or T-54/55.
3. Any one of these five: T-62, T-72, T-80, T-34/85, or T-54/55.
4. Any one of these four: BMP, BMD, BTR-50, or BTR-152.
5. Any one of these three: ASU-57, ASU-85, or SU-100.
6. Any one of these three: ASU-57, ASU-85, or SU-100.
7. BRDM or BRDM-2.
8. BRDM-2 or BRDM
9. M1973 or M1974
10. M1974 or M1973

Work Unit 1-6.

1. a.-e. Any five of these six: M48, M60, M60A1, M60A2, M1, or M551.

2. a. Any order Chieftain, Centurion, or Scorpion.
   b. Any order Chieftain, Centurion, or Scorpion.
   c. Any order Chieftain, Centurion, or Scorpion.
3. Leopard
4. a. AMX-13 or AMX-30
   b. AMX-30 or AMX-13
5. West Germany

Work Unit 1-7.

1. Forces organized and equipped to conduct offensive operations, making full coordinated use of all weapons and weapon systems of that force.

STUDY UNIT 2

ARMOR IDENTIFICATION

STUDY UNIT OBJECTIVE: UPON SUCCESSFUL COMPLETION OF THIS STUDY UNIT, YOU WILL IDENTIFY THE FOUR-PART SYSTEM USED TO IDENTIFY ARMORED VEHICLES, AND IDENTIFY, BY NAME OR MODEL NUMBER AND COUNTRY, THE MOST COMMONLY USED NATO AND WARSAW PACT VEHICLES.

Work Unit 2-1. ARMOR IDENTIFICATION

STATE THE FOUR ELEMENTS OF ARMOR IDENTIFICATION.

FROM ILLUSTRATIONS IDENTIFY ARMORED VEHICLES BY NAME OR MODEL NUMBER AND THE COUNTRY OF ORIGIN BY USING THE FOUR ELEMENTS OF ARMOR IDENTIFICATION.

This work unit on armor identification is not intended to make you an expert but to familiarize you with a simple system designed for you as a Marine to see a vehicle and determine its name, model number, and the country of origin. NATO nations included here are the United States, Britain (United Kingdom) and West Germany. Threat vehicles are represented by those of the Soviet Union (Russia).

a. The four elements of target identification.

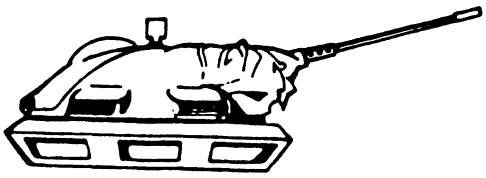
A large percentage of armored vehicles of the world can be identified by considering the four areas of the vehicle:

Cupola
Turret
Main Gun
Suspension

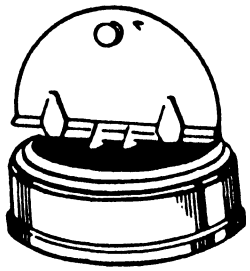
(1) Cupola (fig 2-1).

The cupola is a dome-shaped, armored, tower-like extension of the turret that rotates independently of the turret and houses an automatic gun. If no cupola is present, the vehicle has hatches.

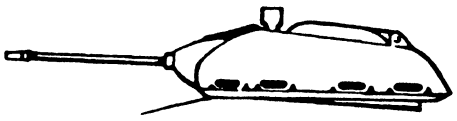
Usually the presence of a cupola denotes a NATO vehicle and the presence of hatches a Warsaw Pact vehicle.



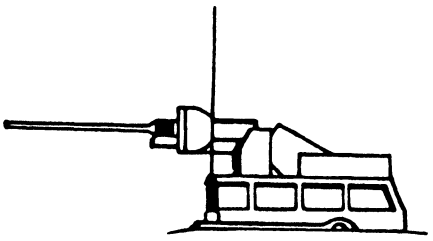
M48A3 CUPOLA



HATCH (NOT A CUPOLA)



M60A1 CUPOLA



AMX 30 HATCH

Fig 2-1 Cupola

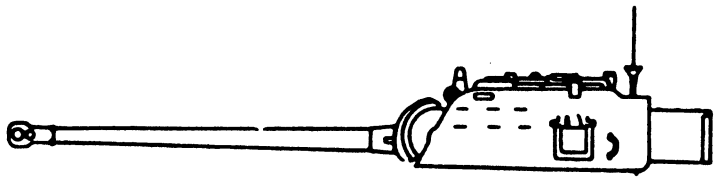
(2) Turret (fig 2-2).

The turret is a low, armored, usually revolving tower-like structure on an armored vehicle which houses the main gun and its crew. The two points of interest here are the shape of the turret and its location.

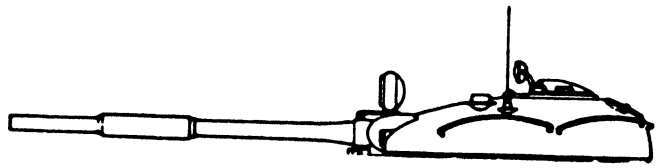
Generally, turrets are described as bulky, domed, or streamlined (fig 2-2). Usually a domed-shaped turret denotes a Warsaw Pact vehicle, a streamlined turret a NATO vehicle. Bulky turrets are used on older vehicles by both NATO nations and the Warsaw Pact.

The location of the turret on the vehicle is center, forward of center, or aft of center. In general, turrets located forward of center are usually Warsaw Pact and those center or aft of center are usually NATO.

OLDER MODEL TURRET, BULKY IN SHAPE.



NEW MODEL TURRET, DOMED.



NEW MODEL TURRET, STREAMLINED

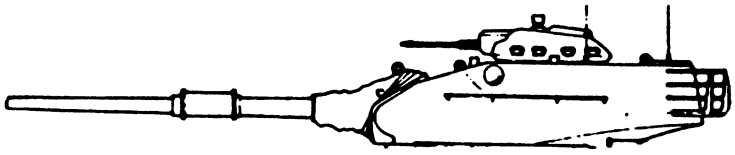


Fig 2-2. Turrets.

(3) MAIN GUN (fig 2-3).

The main gun of an armored vehicle varies in size from the 7.62-mm machinegun to the 125-mm cannon of the T-72. Two areas of concern are the presence or lack of a gas evacuating system and its location.

Basically, there are three types of gas evacuating systems: bore evacuator, muzzle brake, and blast defector.

A bore evacuator is a sleeve-like device on the main gun which allows the gases to escape as the round travels down the length of the tube.

Bore evacuators are used by both Warsaw Pact and NATO vehicles. However, Warsaw Pact vehicles usually have their bore evacuators located forward of center on the barrel whereas NATO vehicles have theirs located center or slightly aft of center.

A muzzle brake is a device located at the muzzle end of a barrel which uses escaping gases to reduce recoil. It may be of the single, double, or multi-baffle type. Muzzle brakes are usually found on Warsaw Pact vehicles.

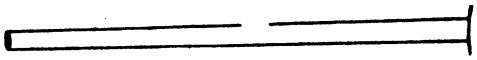
A blast deflector is a T-shaped device located at the muzzle end of a barrel which disseminates the escaping gases to lessen recoil and reduce the flash effect of firing. Blast deflectors are usually found on NATO vehicles.

Bore evacuators, muzzle brakes, and blast deflectors are usually found singly on a gun tube; however, there may be a combination of one or more on some vehicles.

MULTI-BAFFLE

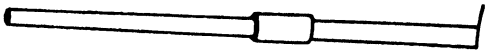
SINGLE BAFFLE

MUZZLE BRAKES

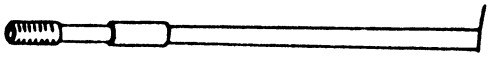


MAIN GUN

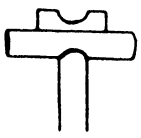
DOUBLE BAFFLE



MAIN GUN WITH BORE EVACUATOR



MAIN GUN WITH BORE EVACUATOR AND MUZZLE BRAKE/ BLAST DEFLECTOR



BLAST DEFLECTOR

Fig 2-3. Main guns.

(4) SUSPENSION (fig 2-4)

The suspension of a vehicle is that part which supports the body on the axles and allows forward or rearward motion. This includes, but is not limited to, the road wheels, track, and associated parts.

Basically, there are two types of suspension systems: Christie and torsion bar (fig 2-4). The Christie suspension system is noted for its large, usually uneven-numbered road wheels and the use of a dead track system. This type of suspension system is normally found on Warsaw Pact vehicles.

The torsion bar suspension system is characterized by the use of small, usually even-numbered road wheels and three to five return rollers normally located up under the fender. This system is normally found on NATO vehicles.

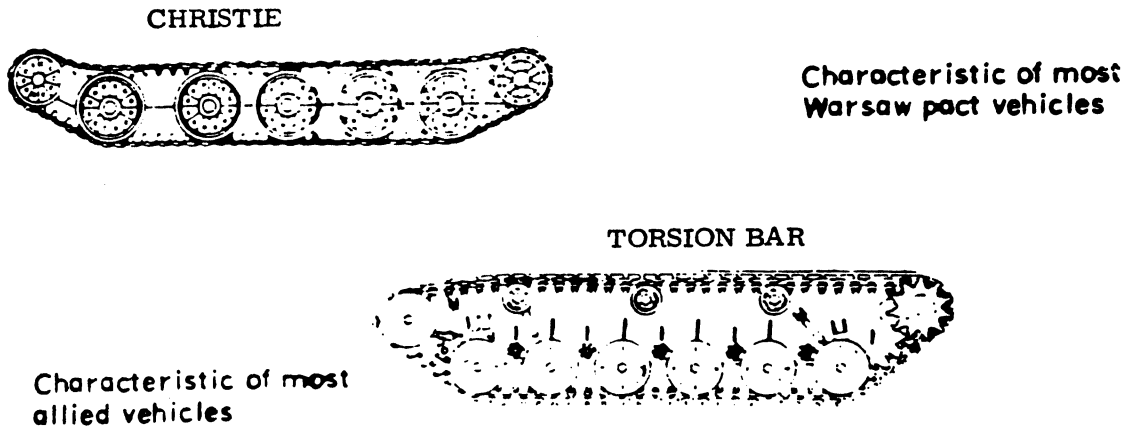


Fig 2-4. Suspension.

b. Armored vehicles.

The A41 Centurion (Mark 13) (fig 2-5) is one of two main battle tanks of the United Kingdom (England).

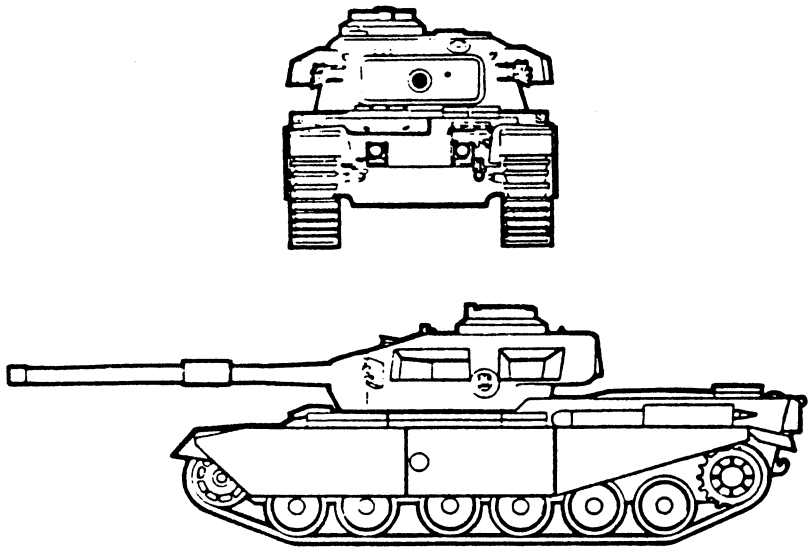


Fig 2-5. A41 Centurion.

The A41 Centurion mounts a 105-mm/L7 rifled cannon as its main armament and two .30 caliber and one .50 caliber machineguns as its secondary armament. The United Kingdom exports the Centurion to many nations.

The Centurion's distinctive features are its small, box-shaped turret and the ever-present side plates. Additional features usable for recognition are the presence of a bore evacuator and the use of the torsion bar suspension system. As an additional capability, the A41 has six smoke chargers on each side of its turret to discharge smoke when maneuvering.

The FV4201 Chieftain (fig 2-6) is the other member of the United Kingdom's family of main battle tanks. The Chieftain mounts a 120-mm/L11 rifled cannon as its main armament and two 7.62-mm and one .50 caliber machine guns as its secondary armament. Like the Centurion, the Chieftain has six smoke dischargers on each side of its turret to discharge smoke during maneuver.

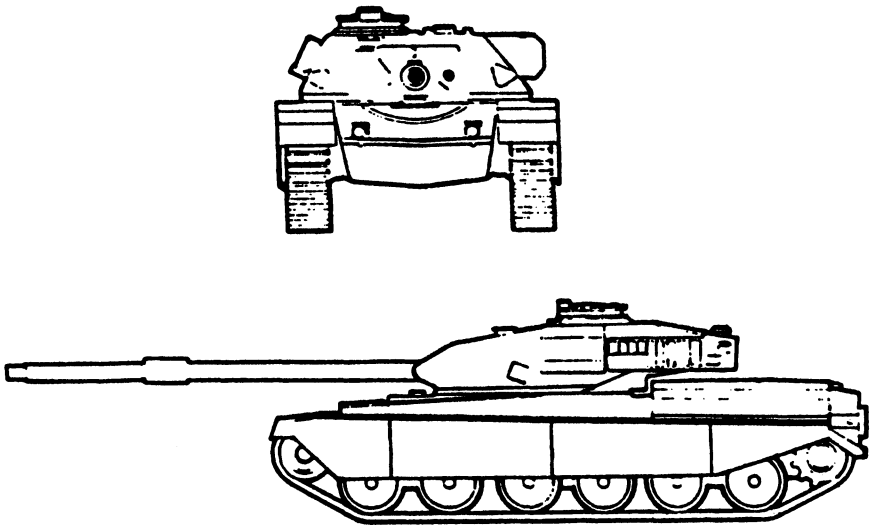


Fig 2-6. FV4201, Chieftain.

The Chieftain's distinctive features are its low streamlined turret that has a noticeable rise as you look from front to rear; and the use of thermal sleeves on the main gun. Some additional features that can be of help in identifying the Chieftain are the presence of a bore evacuator, use of the torsion bar suspension system, and side plates.

The Leopard 1A3 (fig 2-7) is the Federal Republic of Germany's (West Germany's) current main battle tank. The Leopard tank was developed by West Germany after the failure of a joint effort by France and West Germany to produce a medium main battle tank for NATO during the late 1950's and early 1960's. The Leopard I and its variations are manufactured by other NATO nations.

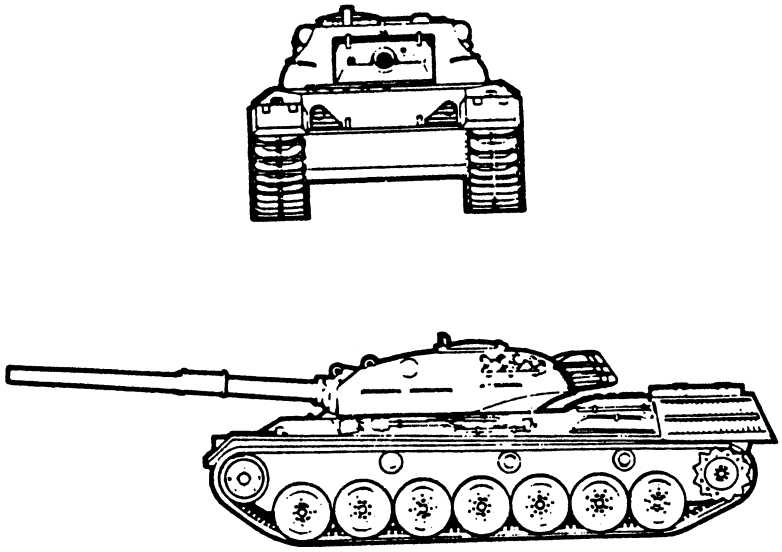


Fig 2-7. Leopard, 1A3.

The Leopard 1A3 has a 105-mm/L7 rifled cannon as its primary armament and two 7.62-mm machine guns as its secondary armament.

The Leopard 1A3 is fairly easy to recognize because of its streamlined turret, bore evacuator and thermal sleeves on the main gun, the use of side plates (on the Leopard II model), and the use of a torsion bar suspension system. Its most distinguishing characteristic, though, is the ventilation grills located on the side and at the rear of the hull.

The Jagdpanzer (hunting tank) "Kanone" (fig 2-8) is West Germay's current gun tank destroyer. More correctly called the JPZ4-5, the "Kanone" is one of the last hunting tanks built by the world's armies. Built on the chassis of the Marder IFV (Infantry Fighting Vehicle), it is one of three vehicles built by the West Germans to protect its armored force. Its partner vehicles are the Rakete and Roland.

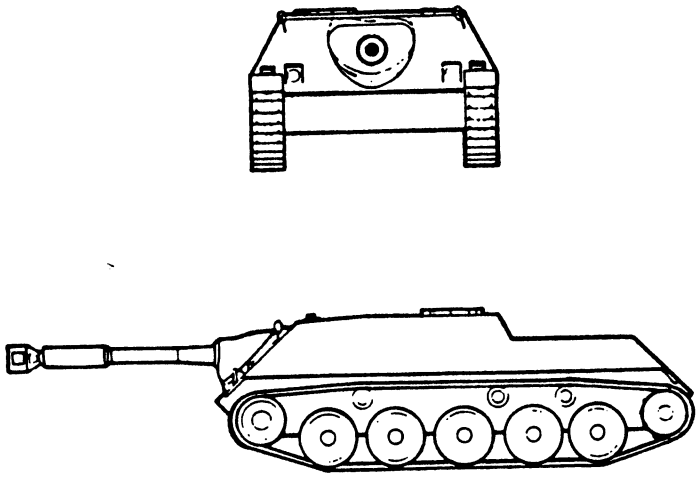


Fig 2-8. Jagdpanzer "Kanone".

The Kanone has a 90-mm rifled cannon as its main armament and two 7.62-mm MG3's as its secondary armament. Further protection is provided by eight smoke discharges located on the back of the superstructure.

The Kanone is identifiable by its lack of a turret (it has a superstructure) and the appearance that the main gun extends from the front of the vehicle. Additional features that can be used to indentify the "Kanone" are the presence of a bore evacuator and blast deflector on the main gun and the use of the torsion bar suspension system.

The M1 (General Creighton Abrams) tank (fig 2-9) is the main battle tank of the future for th United States. The M1 Abrams mounts a 105-mm/M68 rifled cannon as its primary armament and a 7.62-mm and a .50 caliber machinegun as its secondary armament.

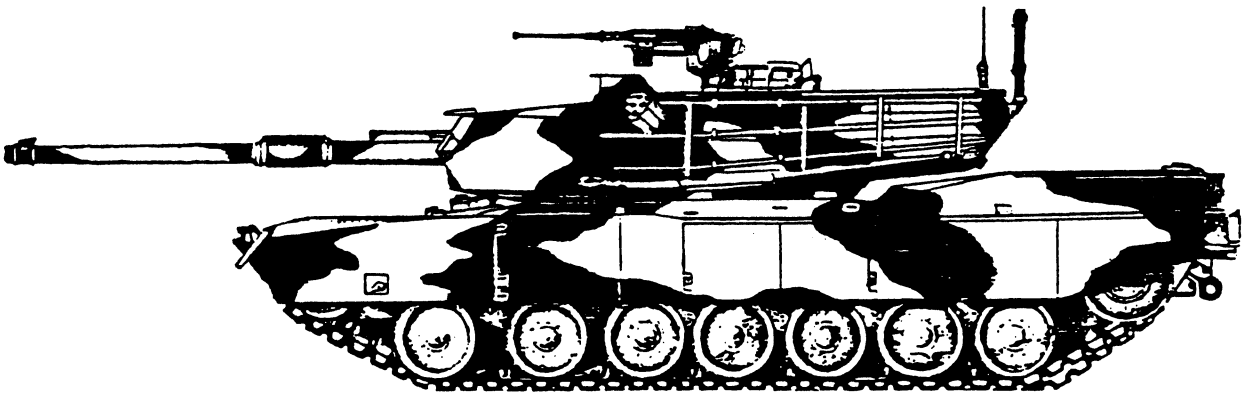


Fig 2-9. M1 (General Creighton Abrams)

The General Abrams (M1) tank is identifiable by its distinctive low silhouette shape. Additional identifiers are the M1's streamlined turret (much like that of the United Kingdom's Chieftain), bore evacuator on the main gun, the use of side plates, and the torsion bar suspension system.

The M60A1 (fig 2-10) is the current main battle tank of the United States. The M60A1 has an English 105-mm/L7 rifled cannon as its primary armament and one 7.62-mm and one .50 caliber machinegun as its secondary armament. The M60A1 is exported by the United States to many nations friendly to the West as well as to its allies. Current short-range plans call for the M60A1 to be modified to the specifications and standards of an M60A3. The long range plans call for the M60 series to be replaced by the M1 Abrams tank.

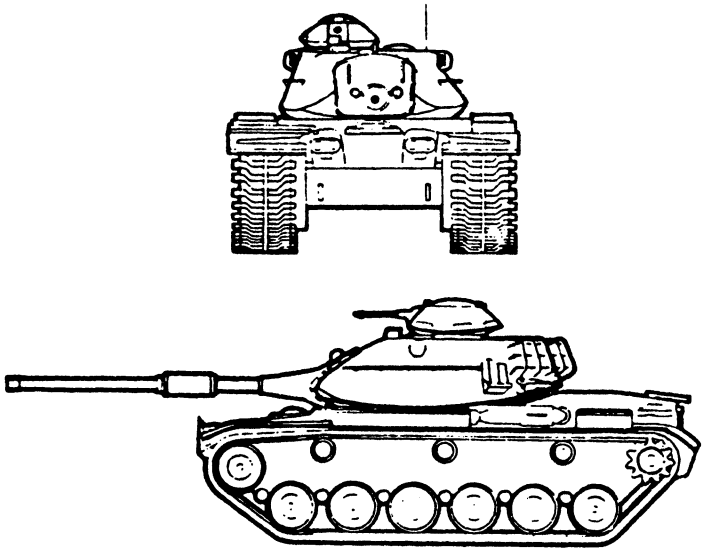


Fig 2-10. M60A1.

The M60A1 is easily recognized by its streamlined turret which has a prominent cupola. Additional distinctive features include the bore evacuator on the main gun, the extensive rear ventilation grill doors, and the use of the torsion bar suspension system.

The T54/55 (fig 2-11) is one of the medium main battle tanks used by the Soviet Union. Although an older vehicle, the T54/55 can still be found not only in Warsaw Pact forces, but also in many nations alined to the Soviet Union.

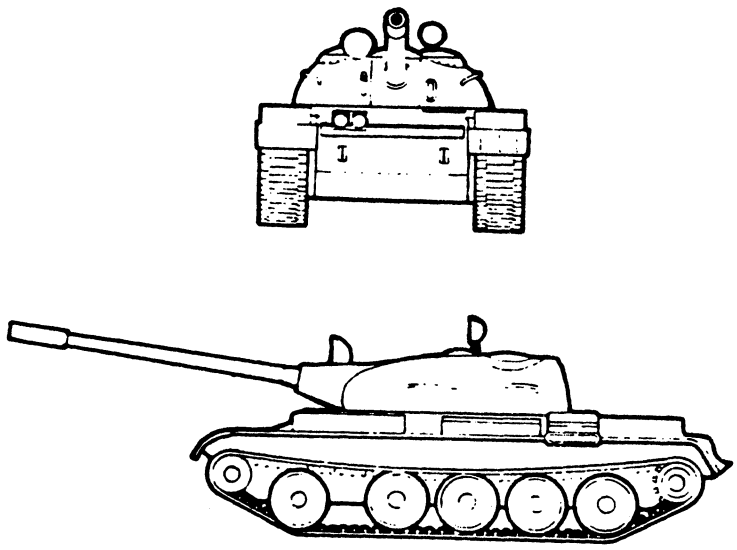


Fig 2-11. T54/55.

The T54/55 mounts a 100-mm rifled cannon as its primary armament and two 7.62-mm and one 12.7-mm (optional) machineguns as its secondary armament.

The distinguishing features of the T54/55 series of tanks are the bowl-shaped turret and the spacing between the first and second roadwheels. Additional features used to recognize the T54/55 are the hatches (which open forward to protect the commander), the presence of a bore evacuator, and the use of the Christie suspension system.

The T62 (fig 2-12) is a medium main battle tank used by the Soviet Union. Although the T62 is to be replaced by newer tanks (T72, fig 2-13), it has been the main battle tank of the Soviet Union.

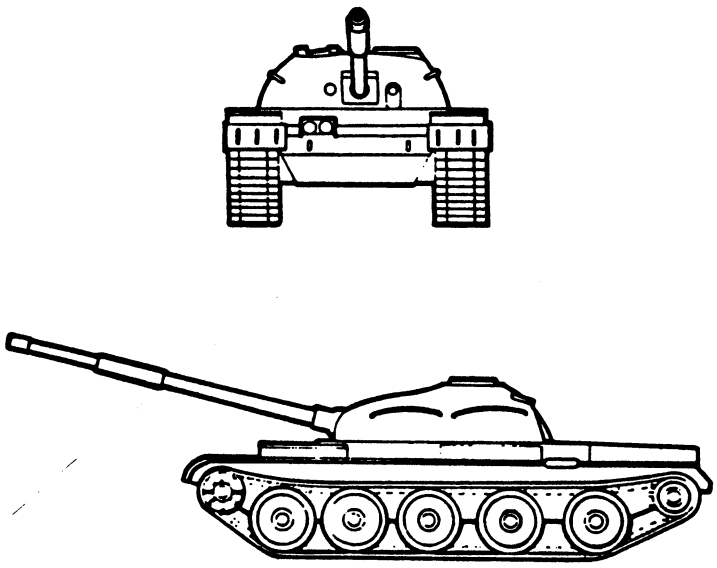


Fig 2-12 T62.

The single biggest advancement in technology brought about by the Soviets on introduction of the T62 was the production of a smooth-bore cannon capable of firing a HVAPFSDS (High Velocity Armor Piercing Fin Stabilized Discarding Sabot) round. The T62, firing the HVAPFSDS round, has the fastest tank round in the world. The HVAPFSDS travels at one mile per second.

The T62 mounts a 115-mm/U-5TS smooth bore cannon as its primary armament and one 7.62-mm and one 12.7-mm (optional) machinegun as its secondary armament.

Like the T54/55, the T62's distinguishing features are its bowl-shaped (domed) turret and the extended roadwheel space. However, in the case of the T62 the spacing is between the third and fourth and the fourth and fifth roadwheels, not the first and second as with the T54/55. Additional features to look for as an aid to identifying the T62 are the presence of a hatch (which opens forward to protect the commander), the presence of a bore evacuator, and the use of the Christie suspension system.

The T64 (fig 2-13) is the latest medium main battle tank in production for use by the Warsaw Pact forces. They are seen in front units of the GSFG (Group of Soviet Forces Germany) and other Warsaw Pact armies.

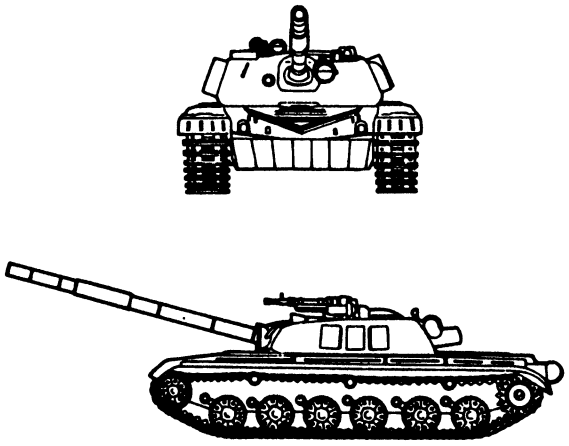


Fig 2-13. T64 (T72)

The T64 mounts a 125-mm smooth-bore cannon as its primary armament and one 7.62-mm and one 12.7-mm machinegun as its secondary armament. The 125-mm smooth bore cannon can fire the HVAPFSDS (High Velocity Armor Piercing Fin Stabilized Discarding Sabot) round, among others. It is also claimed by the Soviets that the T64 is made from a new type of steel known as Cholbolm.

The recognition characteristics of the T64 are its distinctive shape and low silhouette. Other features to aid recognition are the presence of a bore evacuator and the nontraditional use of the torsion bar suspension system.

The ASU-85 (fig 2-14) is one of two air-transportable assault guns used by the Soviet Union. Although the ASU-85 is air-transportable, it is not air-droppable like its counterparts, the ASU-57 (fig 2-15) and the BMD (fig 2-16). The ASU-85 is normally brought in to battle during the third phase of a Soviet-styled airborne assault. Its primary function is to serve as a SPAT (self-propelled antitank gun). It does, however, fill the tank need of the Warsaw Pact airborne forces.

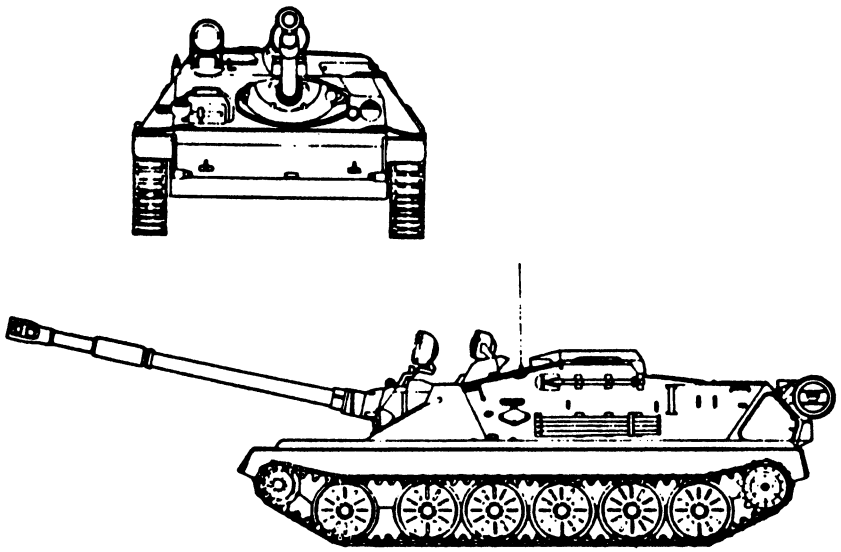


Fig 2-14. ASU-85.

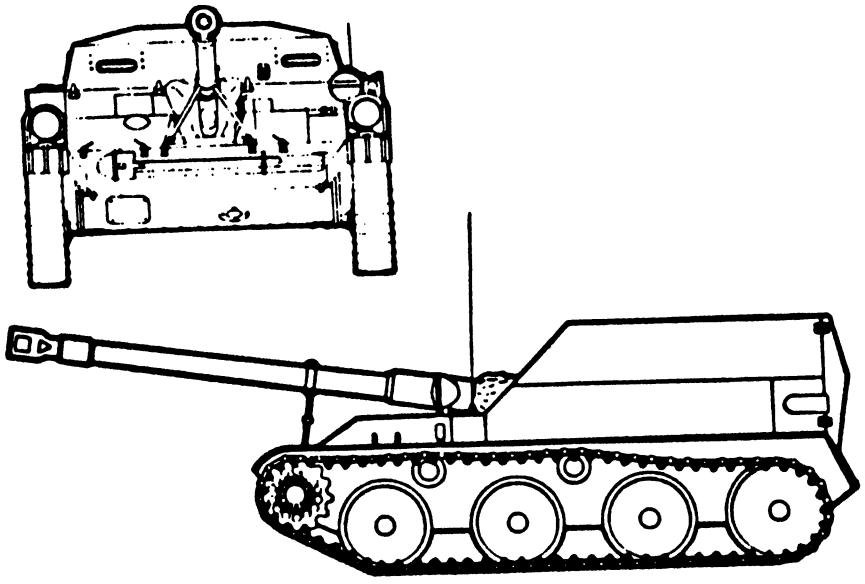


Fig 2-15. ASU-57

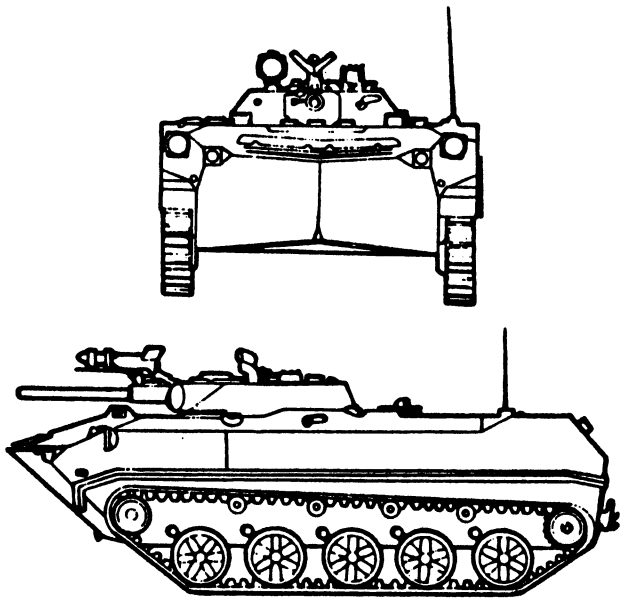


Fig 2-16. BMD

The ASU-85 mounts an 85-mm/D-5S rifled cannon as its main armament and one 7.62-mm machinegun as its secondary armament.

The ASU-85's distinguishing features are the lack of a turret (it has a superstructure) and the appearance that the main gun is placed approximately 1/3 of the way back from the front of the vehicle. Other distinguishing features are the presence of a bore evacuator and single baffle muzzle brake on the main gun and the use of the Christie suspension system.

The ZSU 23-4 Shika (fig 2-17) is the latest of two low altitude (0-2500 meters slant range) antiaircraft weapon systems used by the Warsaw Pact forces. Although originally produced to replace the ZSU 57-2 (fig 2-18), the ZSU 23-4 is used in conjunction with the ZSU 57-2.

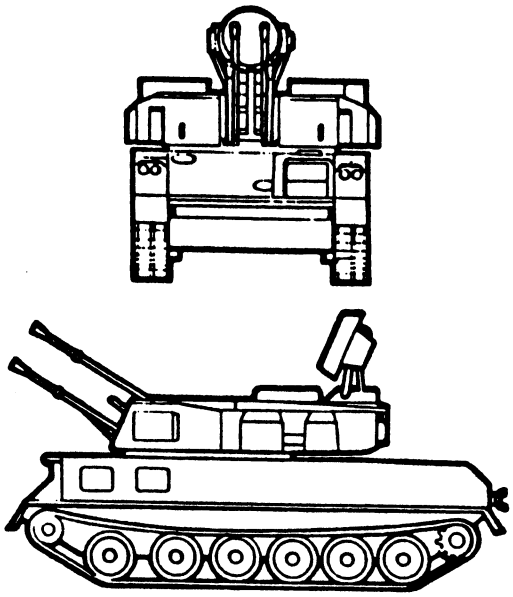


Fig 2-17. ZSU 23-4.

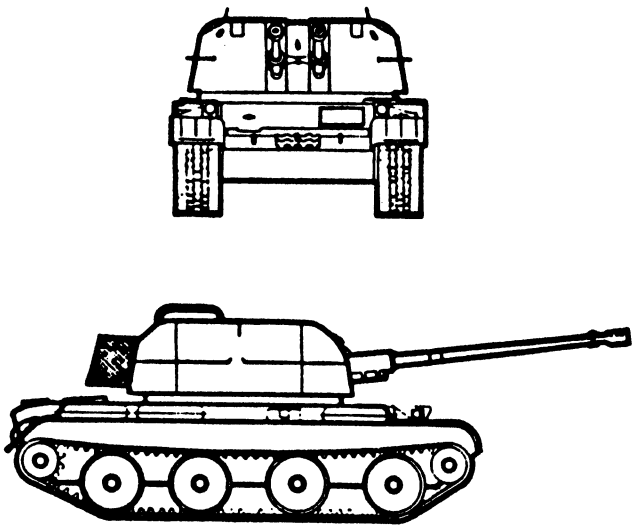


Fig 2-18. ZSU 57-2

The quad (four) 23-mm cannons of the Shika are radar controlled by the radio unit located on the roof of the superstructure. Incidentally, this radar dish also controls the fires of the SA-6 (surface-to-air missile system) Gainful. The four 23-mm cannons can fire independently of each other if any are damaged. Although designed as a SPAA (self-propelled antiaircraft) gun, its second mission is antimaterial and its third mission is antipersonnel. Each 23-mm cannon fires 1,000 rounds per minute.

The distinguishing characteristic of the ZSU 23-4 is its shape. The Shika has no turret but a rather large superstructure with quad (four) 23-mm cannons protruding from the front of it. The hull and body of the ZSU 23-4 are the same as that of the PT 76 (fig 2-19).

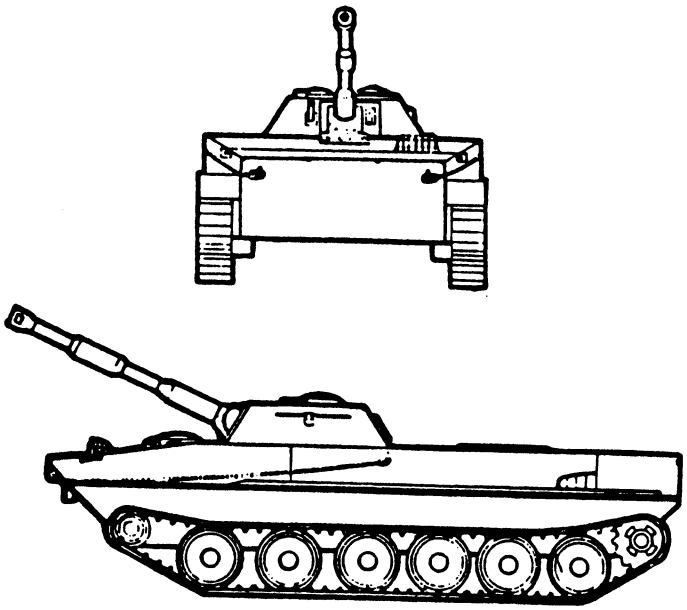


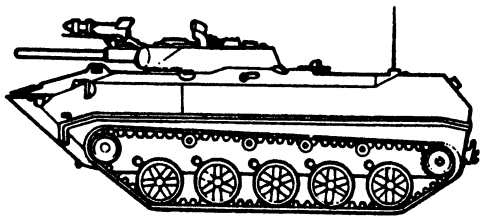
Fig 2-19. PT76.

EXERCISE: Answer the following questions and check your responses against those listed at the end of this study unit.

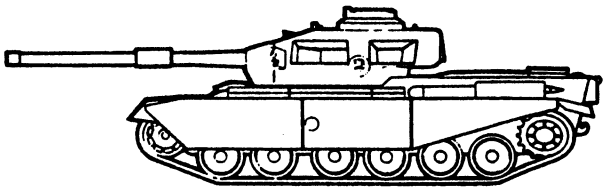
1. State the four elements of armor identification.

a._____
b._____
c._____
d._____

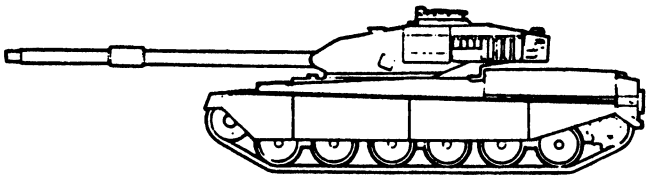
Identify the following armored vehicles by name, model number and or country of origin . Place your answer next to the question number.



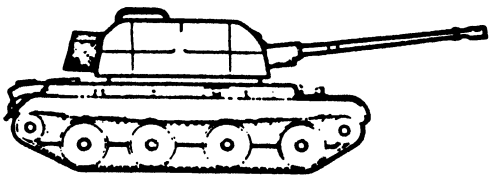
2._____



3._____



4._____



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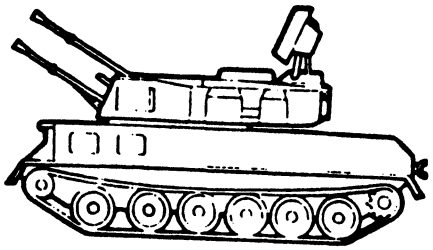

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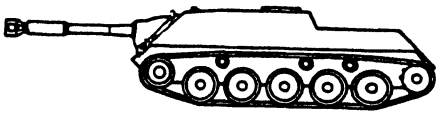

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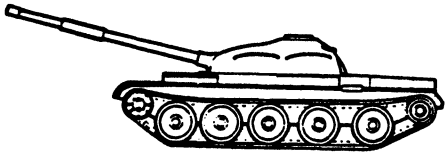
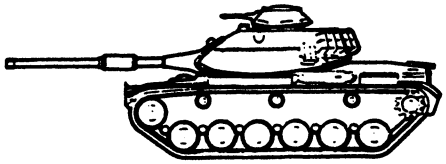
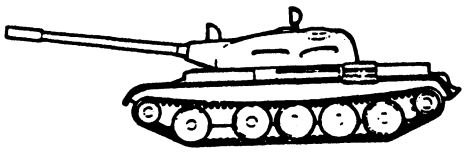


8. _____

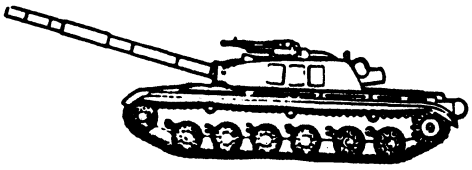


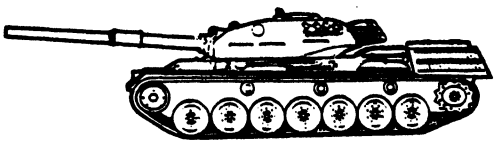
9. _____

10. _____



11. _____





12._____ 13._____

Amswers to Study Unit # 2 Exercises

Work Unit 2-1.

1. a. cupola
   b. Turret
   c. Main Gun
   d. suspension

2. BMD Soviet
3. Centurion-British
4. Chieftain-British
5. ZSU 57-2 Soviet
6. ZSU 23-4 Soviet
7. Kanone-West Germany
8. T62 Soviet
9. M60A1 U.S.
10. ASU 85 Soviet
11. T54/55 Soviet
12. T72 Soviet
13. Leopard-West German

STUDY UNIT 3

ANTIARMOR OPERATIONS

STUDY UNIT OBJECTIVES: UPON SUCCESSFUL COMPLETION OF THIS STUDY UNIT YOU WILL IDENTIFY THE CHARACTERISTICS OF ANTIMECHANIZED OPERATIONS, AMPHIBIOUS CONSIDERATIONS, THE HAW MAW LAW CONCEPT, THE ACTIVE MEANS OF ANTIMECHANIZED EMPLOYMENT AS HAW, MAW, OR LAW, THE PASSIVE MEANS OF ANTIMECHANIZED EMPLOYMENT, THE GENERAL CONCEPTS FOR ANTIMECHANIZED FIRES, AND ANTIMECHANIZED WARNING PROCEDURES. YOU WILL ALSO IDENTIFY THE ELEMENTS OF A TANK ALERT AND TANK CLEAR MESSAGE, AND THE ORGANIC AND COMBAT SUPPORT WEAPONS AVAILABLE TO THE INFANTRY BATTALION.

Work Unit 3-1. CHARACTERISTICS OF ANTIMECHANIZED OPERATIONS.

GIVEN A LIST OF CHARACERISTICS OF ANTIMECHANIZED OPERATIONS, MATCH EACH CHARACTERISTIC WITH ITS APPROPRIATE COMMENT.

Mechanized forces play an important role in modern warfare. A landing force in an amphibious assault or in subsequent operations ashore must have the ability to contain and destroy a threat mechanized force.

Antimechanized operations may be either offensive or defensive. They form an integral part of the landing forces overall tactical operations and cannot be isolated and treated separately. Characteristics of antimechanized operations include:

Absence of clearly defined tactical areas. Mechanized forces seek out a battlefield which is extensive and porous with wide gaps between units. In such a situation, a landing force would be in continuous danger of mechanized attack from any direction that provides good trafficablility. Friendly and threat elements tend to bypass or outflank one another and become intermingled, so that smaller scale antimechanized actions may take place throughout the battle area at any time. (Small scale operations are covered in more detail in Study Unit 4 of this course.)

Importance of key terrain. As in no other operation, terrain is a limiting factor. It dictates when and where friendly and threat mechanized forces can be used and is an important consideration in their employment. The successful conduct of an antimechanized operation depends, to a large degree, on the capability for using terrain intelligently.

Rapid massing of combat power. The antimechanized operation imposes an increased requirement of mobility on all elements of the landing force so that antimechanized resources can be massed rapidly against an attacking threat mechanized force.

Minimal reaction time. The ability of threat mechanized forces to mass an attack rapidly allows the landing force a minimum of reaction time. There is no time for lengthy plans. The assessment of the mechanized threat and the response to it must be accomplished quickly. Speed and simplicity are a must. The fastest means of communication are used to alert and maneuver antimechanized resources.

Centralized control and coordination. Antimechanized operations are controlled and coordinated centrally as much as practicable. Prior to the determination of the threat's time of attack, control and coordination are retained at the division or higher level. After the location of the main threat has been determined, control and coordination are then passed to the commander of the threatened element.

Total commitment of antimechanized resources. Antimechanized means, used piecemeal against a well organized enemy, will fail to provide or support an adequate antimechanized offense or defense. The antimechanized operation is designed to provide for massing all available antimechanized resources in the critical area as rapidly as possible. It focuses all available antimechanized weapons at the point of decision.

Avoidance of stereotyped techniques. The antimechanized response is varied to meet the mechanized threat. It requires daring and imaginative action and leadership at all levels. The variety of antimechanized situations that may confront you generates a continuing evolution of new techniques on the battlefield. Employment of stereotyped procedures of predictable tactical patterns invites destruction.

Increased organizational flexibility. The tactical arrangement and distribution of antimechanized resources are continuously tailored to meet the mechanized threat. Antimechanized means are shifted as required to counter shifts and changes by the mechanized threat forces. Indiscriminate attachment of supporting antimechanized means to assault elements is avoided.

EXERCISE: Answer the following questions and check your answers at the back of this study unit.

Matching: Match each characteristic in column 1 with its appropriate comment. Place the letter preceding your choice in column 2 in the space provided in column 1.

Column 1 Characteristics	Column 2 Appropriate comments
1.____ Absence of clearly defined tactical areas	a. Focuses all available antimechanized weapons at the point of decision
2.____ Key terrain.	b. Increased requirement for mobility
3.____ Rapid massing.	c. Predictable tactical patterns invites destruction
4.____ Short reaction time.	d. No time for lengthy plans
5.____ Control and coordination	e. Elements tend to bypass or outflank each other
6.____ Total commitment of antimechanized resources	f. Is passed to the commander of the threatened unit.
7.____ Avoidance of stereotyped techniques	g. Antimechanized means are shifted as required
8.____ Increased flexibiltiy	h. Dicates where mechanized forces can or cannot be used

Work Unit 3-2. AMPHIBIOUS CONSIDERATIONS

GIVEN A LIST OF AMPHIBIOUS CONSIDERATIONS, MATCH EACH CONSIDERATION WITH ITS APPRORIATE COMMENT

Organizing and executing an effective antimechanized operation is a challenge under the most ideal conditions. Antimechanized operations within the framework of an amphibious assault are particularly difficult because of inherent amphibious considerations which tend to increase the vulnerability of the landing force to a large scale mechanized attack. Among these considerations are:

Initial absence of depth on the battlefield. In the amphibious assault, the landing force initially has no land area to defend. The purely offensive nature of its operations makes the landing force particularly vulnerable to attack by mechanized threat forces. This situation continues until the momentum of the initial assault carries the landing force far enough inland to provide the necessary depth to execute a conventional antimechanized defense.

Initial absence of antimechanized means. In the early stages of the amphibious/ helicopterborne assault, assault elements depend on organic antitank/assault weapons and air and naval gunfire. Tanks may be landed in the first assault waves to support the assault or to counter an immediate enemy tank threat in the landing area. However, their landing may be delayed by beach and offshore obstacles and threat antitank weapons in the landing area. Antimechanized resources lacking the armor protection, shockpower, and firepower of tanks are normally landed after the tanks. The landing force remains in a precarious position until it gains its full antimechanzied capability.

Restrictions on landing force maneuver. In the initial stages of the amphibious assault, a landing force will normally present a good target to threat mechanized forces. In addition, a landing force maneuver may be restricted by manmade obstacles to its front and the sea at its back. Until the landing force breaches obstacles to its front and gains depth on the battlefield, its capability to introduce and maneuver its heavy antitank means on the battlefield is severly restricted.

Lack of battlefield reconnaissance. The employment of the landing force's mobile antimechanized resources is initially hampered by unfamiliarities with the landing area which can be resolved only by on-the-ground reconnaissance. These elements remain vulnerable to threat mechanized forces until detailed battlefield reconnaissance is completed and adequate mechanized trafficability plans are developed.

Absence of artificial barriers. During the early stages of the amphibious operation, the landing force has no artificial barrier system set up to restrict, disrupt, or channel the maneuver of the threat mechanized forces.

Decentralization of control. During the ship-to-shore movement, antimechanized elements of the landing force are deployed and may become separated. Furthermore, control is, of necessity, decentralized. These elements are vulnerable to piecemeal destruction by threat mechanized forces until centralized control and unity of command are reestablished.

Vulnerability of supporting elements. The landing force is composed of two elements: the mobile tactical elements and the relatively immobile support elements. The latter elements, such as fuel farms, aviation installations, and logistics facilities, are attractive targets for threat mechanized forces and possess only limited numbers of infantry antitank weapons.

Vulnerability of helicopterborne troops. Elements landed by helicopter in the initial stages of the amphibious operation are extremely vulnerable to threat mechanized attack since they are isolated from major elements of the landing force and possess a limited antimechanized capabiltiy. Helicopterborne forces remain vulnerable until a link-up is made with other elements of the landing force and they are reinforced with heavy antitank weapons.

Unit separation during nuclear threat. The threat of enemy nuclear weapons often dictates a significant degree of separation for the subordinate units of the landing force. Separation lessens the commander's capability to mass his antimechanized means rapidly in order to defeat a counterattack by a threat mechanized force. The gaps resulting from such separation can be exploited by rapid thrusts of threat mechanized forces.

EXERCISE: Answer the following questions and check your answers against those listed at the end of this study unit.

Matching: Match each consideration Column 1 with its approriate comment in Column 2. Place the letter from column 2 next to the number in column 1.

COLUMN 1 Considerations	COLUMN 2 Appropriate comment
1.____ Absence of depth	a. Units that are isolated from major elements of the landing force.
2.____ Absence of means	b. Elements are deployed and may become separated
3.____ Restrictions on maneuver	c. Hampered by unfamiliar landing area
4.____ Lack of reconnaissance	d. Not having full antimechanized capability
5.____ Absence of artificial barriers	e. Often dictates wide separation of units
6.____ Decentralization of control	f. Attractive targets for threat mechanzied forces
7.____ Vulnerability of supporting elements	g. Unable to restrict, disrupt, or channel
8.____ Vulnerability of helicopterborne troops	h. Difficulty in maneuvering heavy antitank means
9.____ Separation during a nuclear threat	i. A characteristic of a conventional antimechanized defense

Work Unit 3-3. HAW, MAW, LAW, THE ACTIVE AND PASSIVE ANTIMECHANIZED MEANS, AND TWO EMPLOYMENT METHOD CONCEPTS.

WRITE THE DEFINITION OF THE HAW, MAW, LAW CONCEPT.

GIVEN A LIST OF ACTIVE ANTIMECHANIZED MEANS, LABEL EACH MEANS AS EITHER A HAW, MAW, OR LAW WEAPON.

WRITE THE FOUR PASSIVE ANTIMECHANZIED MEANS.

STATE THE TWO EMPLOYMENT METHOD CONCEPTS.

The HAW (heavy antiarmor weapons), MAW (medium antiarmor weapons), and LAW (light antiarmor weapons) concept is engagement of threat armor at the greatest possible range using HAW, subjecting the surviving armor to an intensified volume of fire as it comes within range of MAW and finally, engagement with the heavy fire of LAW at shorter ranges.

Direct fire weapons are the M220 TOW (HAW), the M47 Dragon (MAW), the M72A2 LAW (LAW), and the M202A1 MPFW (LAW).

All supporting arms, air (including the TOW Cobra), naval gunfire, artillery, and tanks are considered HAW and would engage targets beyond the range of the M220 TOW.

Antimechanized means include all means, both active and passive, that can be employed effectively against threat armor. The active antimechanized means capable of killing or disabling threat armor are:

a. M47 Dragon(M)
b. M220 TOW (H)
c. Self-propelled antitank/assault weapons (H)
d. Rocket Launchers (L)
e. Mines (L)
f. Demolitions (L)
g. Tanks (H)
h. Artillery (H)
i. Naval Gunfire (H)
j. Aircraft (H)
k. Nuclear and chemical weapons (H)

Passive antimechanized means are those measures other than active which are designated to delay and disrupt threat mechanized forces. They include the use of:

a. Obstacles and barriers
b. Smoke
c. Illumination
d. Electronic warfare

There are two general concepts of employment for antimechanized fires: (1) concentric and ever-increasing volume of fires, and (2) massed surprise fires.

Concentric and ever-increasing volume of fires requires that direct fire weapons engage targets at the maximum range expected to achieve effective hits (fig 3-1). A technique for achieving depth in the defense is illustrated in figure 3-2. This is the preferred concept since it engages the threat armor forces earlier and at longer ranges from friendly positions.

The massed-surprise technique visualizes all direct fire weapons engaging the enemy force simultaneously. This method will result in more initial kills on first engagement, but at a much closer range. However, the mass and momentum may still carry the threat force into friendly positions. This technique should be employed only when terrain restricts fires to a shorter range (fig 3-3).

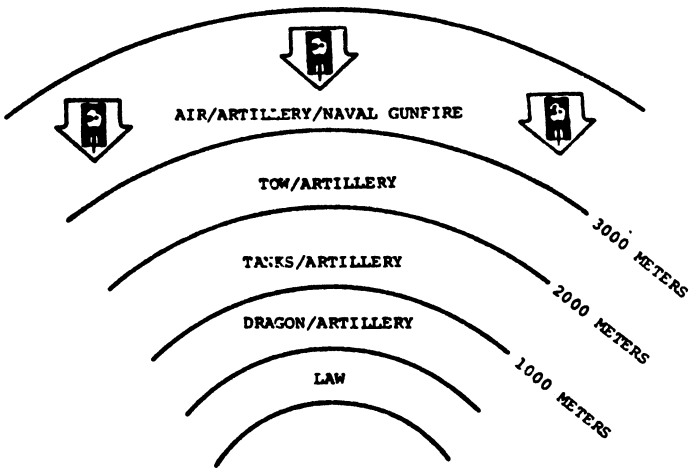


Fig 3-1. Concentric and ever-increasing volumes of fire.

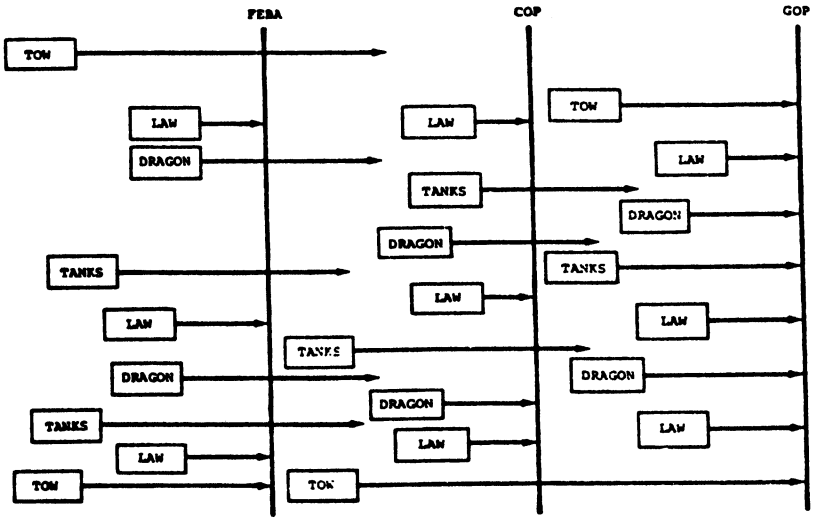


Fig 3-2. Technique for achieving depth using concentric and ever-increasing volume of fire

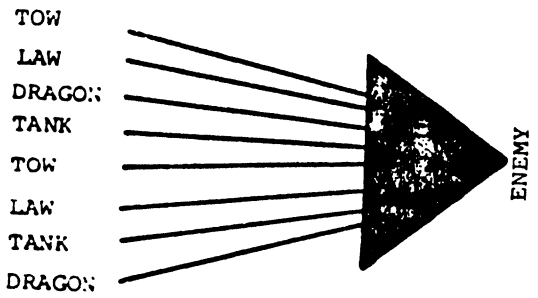


Fig 3-3. Massed surprise fires.

EXERCISE: Answer the following questions and check your responses against those listed at the end of this study unit.

1. Write the HAW, MAW, LAW concept in your own words.

_____
_____
_____

2. From the list of active antimechanized means below write the letter H, M, or L (HAW, MAW, LAW) which best describes the means.

a. M-47 Dragon _____
b. M-220 TOW _____
c. Self-propelled weapons _____
d. Rocket launchers _____
e. Mines _____
f. Demolitions _____
g. Tanks _____
h. Artillery _____
i. Naval gunfire _____
j. Aircraft _____
k. Nuclear and chemical weapons _____

3. Write the four passive antimechanized means.

a. _____
b. _____
c. _____
d. _____

4. State the two general concepts of employment for antimechanized fires.

a. _____
_____

b. _____
_____

Work Unit 3-4. ANTIMECHANIZED WARNING PROCEDURES.

WRITE THE WARNING OF EACH READINESS CONDITION.

WRITE THE ELEMENTS OF THE TANK ALERT AND TANK CLEAR MESSAGE.

Successful implementation of the antimechanized warning system provides for minimal reaction time in placing massed fires on mechanized threat targets. This dictates the antimechanized conditions of warning.

Certain conditions of antimechanized warning are normally established as SOP. Upon the setting of any one condition, prearranged countermechanized plans are put into effect to counter the mechanized threat. These conditions of warning are normally set at division level or higher. While their nature and format vary in different operations, it is important that they be agreed upon and disseminated to all elements well in advance of project operations. Normally, they are published in the countermechanzied appendix to the operation plan. The following examples represent typical antimechanized conditions of warning:

Condition IV The hostile armored force is detected but contact is not imminent.

Condition III The hostile armored force is approaching the landing force and contact is imminent. The time and place of contact can be predicted with reasonable accuracy.

Condition II Friendly units are under attack by threat armored forces.

Condition I The landing force is seriously endangered by the threat armored attack in progress.

Upon sighting the threat mechanized force, any unit or individual making the sighting transmits immediately to his next senior commander, by the most rapid means available, information as to what has been seen: the location, distance, speed, and the time of the sighting. Flash precedence is used and contact messages normally are authenticated, but lack of authentication does not delay their retransmission or relay.

From the information you transmit, the unit commander issues the tank alert. It is important that you know the contents of this alert/message to amplify your contact message.

Antimechanized warning messages contain the following information:

a. The phrase "tank alert" to indicate that the message pertains to imminent threat mechanized attack.

b. A designated letter/number to indicate the antimechanized condition of readiness.

c. Voice call sign(s) of the unit(s) against which it appears that the threat mechanized force will strike.

d. Size or strength of the threat mechanized force which is making the attack.

e. Location of the threat tanks and direction of travel.

f. Time at which it is anticipated the threat mechanized attack will strike.

When the danger of threat mechanized forces is no longer imminent (because the threat force has withdrawn or has been destroyed) a message is sent notifying all units which have been alerted that the imminent threat from armored forces has passed.

This message will contain the following information:

a. The phrase "tanks clear."
b. Communications precedence is immediate
c. Time
d. Authenticate the message when required.

EXERCISE: Answer the following questions and check your answers against those listed at the end of this study unit.

1. Write the readiness condition for each warning number.

   a. IV _____

   b. III _____

   c. II _____

   d. I _____

2. The "tank alert" message has six parts. In your own words, write the elements of each of the six parts.

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

   f. _____

3. The tank clear message has four parts. In your own words, write the elements of each of the four parts.

   a. _____

   b. _____

   c. _____

   d. _____

Work Unit 3-5. INFANTRY BATTALION WEAPONS

MATCH EACH ORGANIC INFANTRY BATTALION WEAPON USED IN ANTIARMOR WARFARE WITH ITS DESCRIPTION OR CAPABILITY.

The organic weapons of an infantry battalion are capable, in a limited way, of defeating an armored force. However, when used in conjunction with combat support, in accordance with the HAW, MAW, LAW concept, these weapons can totally defeat any armored force.

The orgnaic weapons of an infantry battalion are located in the various companies of the battalion and they may or may not be co-located with each other on the battlefield.

The infantry battalion's organic weapons are:

a. The M16 rifle with a maximum effective range of 460 meters, the M16, firing ball and tracer ammunition, causes a variety of casualty effects among personnel and various amounts of damage to materiel dependent on type. In antiarmor it will be used against the accompanying infantry.

The M16 is the individual rifle of the infantryman in the infantry battalion. For further information on the M16 rifle, see MCI course 03.64, Basic Marksmanship, and FM 23-9, M16A1 Rifle and Rifle Marksmanship.

b. The 60-mm mortar,M224, is a smooth-bore, muzzle-loaded, high angle-of-fire weapon designed to provide indirect fire support to the infantry battalion's subordinate units, rifle companies. This weapon will be used to make armored vehicles close their hatches thereby reducing their vision. It is also used to produce casualties among accompanying infantry.

The M224 fires a variety of rounds that provide indirect fire support to the rifle company: high explosive, illumination and white phosphorous (WP).

The M224 mortar is found in the weapons platoon of the rifle company.

For further information on the M224 mortar see MCI Course 03.23, The M-224, 60-mm Mortar Crewman, FM 23-85, 60-mm Mortar, M19, and TM 9-1010-223-10.

c. The M29A1 81-mm mortar is a smooth-bore, muzzle-loaded, high angle-of-fire weapon. The M29A1 mortar was designed to provide organic indirect fire support to the infantry battalion and is used in the same antiarmor role as the 60-mm mortar.

With a maximum effective range of 4737 meters, the M29A1 fires a variety of rounds, high explosive (HE) illumination and white phosphorous.

The M29A1 mortar is found in the weapons company of the infantry battalion.

For further information on the M29A1 mortar see MCI course 03.22, The 81-mm Mortar Crewman and FM 23-90, The 81-mm Mortar.

d. The M47 assault weapon system (Dragon) is a command to line-of-sight wire guided missile system; it is a man-portable, shoulder-fired, medium antiarmor weapon. The M47 was designed to destroy armor and other hard targets.

At the maximum effective range of 1000 meters, the Dragon's warhead is capable of destroying most of the world's armor and other hard targets. It is located in the weapons company of the infantry battalion. For further information on the Dragon see MCI Course 03.56, The Dragon Weapon System Crewman, and TC 23-24, Dragon Medium Antitank Assault Weapon System M47.

e. The M60 7.62mm machine gun is an air-cooled, belt-fed, gas-operated, automatic weapon designed to provide direct fire support to the infantry battalion, with a maximum effective range of 1100 meters. The M60 is capable of producing damage to personnel, materiel, and light armor.

f. The 66-mm HEAT rocket M72A2 is a lightweight, self-contained, antiarmor weapon (LAW) designed to provide antiarmor and direct fire assault support to the infantry battalion.

With an average maximum effective range of 200 meters, the M72A2 is capable of defeating most of the world's armor and other hard targets. It is issued as a round of ammunition to the individual Marine on an "as needed" basis and can be found anywhere in the infantry battalion. It should be noted, however, that the light assault teams of the infantry battalion are armed with the 66-mm HEAT rocket as their primary crew-served weapon. For additional information on the 66-mm HEAT rocket, M72A2, see MCI course 03.57, The MPFW and LAW Crewman and FM 23-33, 66-mm HEAT Rocket M72A1, M72A2, and M72.

g. The M202 rocket launcher (MPFW) is a lightweight, four-tube, shoulder-fired weapon designed to provide direct fire assault support to the infantry battalion and its subordinate elements, the rifle companies.

The M202 has a maximum effective range of 200 meters for point targets and 750 meters for area targets. The 66-mm rockets for the M202 rocket launcher provide flame support to the infantry battalion. It is found in the weapons platoon of the rifle companies.

For further information on the M202 rocket launcher see MCI Course 03.57, The MPFW and LAW Crewman and FM 23-33, Combat Flame Operations.

h. The 40-mm grenade launcher, M203 is a lightweight, single-shot, breech-loaded, pump-action (sliding barrel), shoulder-fired weapon attached to the M16/M16A1 rifle. The M203 was designed to provide individual actual indirect fire support to the rifle squad.

The M203 has a maximum effective range of 150 meters for point targets and 350 meters for area targets. It provides a variety of support to the rifle squad by firing a wide range of projectiles.

The M203 is found in the rifle squad of the infantry battalion (one per fire team). For further information on the M203 grenade launcher see MCI Course 03.40, Formations, Signals, and Techniques of Fire, and FM 23-31, 40-mm Grenade Launchers M203 and M79.

EXERCISE: Answer the following questions and check your answers against those listed at the end of this study unit.

Matching: Match the organic infantry battalion's weapons with its description , use, or capability.

1.____ Rifle, 5.56-mm, M16

2.____ Mortar, 60-mm, M224

3.____ Mortar, 81-mm, M29A1

4.____ Assault Weapon System (Dragon),M47

5.____ Machine gun, 7.62-mm, M60

6.____ 66-mm HEAT Rocket, M72A2

7.____ Multi-shot Portable Flame Weapon M202

8.____ Launcher, Grenade, 40-mm, M203

a. Is the weapon that provides a wide variety of indirect fire support to the infantry battalion

b. This weapon was designed to provide direct fire assault support to the infantry battalion and is issued on an "as needed" basis as well as being the primary weapon of the light assault teams.

c. This weapon provides indirect fire support to the rifle squad.

d. This weapon provides a wide variety of indirect fire support to the rifle company.

e. This weapon is a command to line-of-sight wire guided missile system that is man-portable and shoulder-fired.

f. This weapon is the individual weapon of the infantryman.

g. This weapon is the infantryman's basic direct fire support weapon.

h. This 66-mm rocket launcher provides flame support to the infantry company/battalion.

Work Unit 3-6. COMBAT SUPPORT

LIST THE TYPES OF COMBAT SUPPORT AVAILABLE TO THE INFANTRY BATTALION IN AN ANTIARMOR ENVIRONMENT.

The six types of combat support available to the infantry battalion to ensure its success in combined arms forces are:

a. Assault amphibian

(1) The primary mission of the assault amphibian battalion is to land the surface assault elements of the landing force and their equipment in a single lift from assault shipping during amphibious operations to inland objectives, and to conduct armored mechanized operations and related combat support in subsequent operations ashore.

(2) The secondary mission of the assault amphibian battalion includes armored mechanized task forces; link-up operations; riverine assault operations; reconnaissance team inserts and extractions; mechanized medevac or refueling assignments; counterattack and reinforcement operations; mobile defense; antiarmor missions with antiarmor assault teams and tanks; and resupply missions forward of the FEBA. In addition, recovery vehicles offer mobile retrieval and maintenance capabilities.

b. Artillery

Marine Corps artillery has the following missions in support of the amphibious assault and subsequent operations ashore:

(1) Provide timely close accurate and continuous fire support to elements of the landing force.

(2) Give depth to combat by attacking hostile reserves, resticting movement, providing long-range support for reconnaissance elements, and disrupting command and control systems and logistical installations.

(3) Deliver counterbattery fires throughout the range of the landing force weapons systems.

c. Aviation. The primary mission of Marine Corps aviation is to participate as the supporting air component of the FMF in the seizure and defense of advanced naval bases and for the conduct of such land operations as may be needed in a naval campaign. Another mission of Marine Corps aviation is to participate in such other Navy functions as the fleet commanders may direct.

d. Combat engineers. The primary mission of combat engineers is to provide close, combat engineer support as necessary to meet the normal requirements of an infantry regiment and associated task elements in combat operations under moderate conditions of climate, weather, and terrain.

e. Reconnaissance. The primary mission of reconnaissance is to conduct ground reconnaissance and surveillance in support of a Marine division or its subordinate elements.

f. Tanks. The mission of the tank battalion is to provide combat power to the Marine division in the amphibious assault and subsequent operations ashore, using fire and maneuver, mobility, armor protected firepower and shock action to close with and destroy the enemy, his materiel, and his fortifications.

Assault amphibians, artillery, combat engineers, reconnaissance, and tank assets are organic to the Marine division. Aviation is the only type of combat support external to the Marine division.

EXERCISE: Answer the following questions and check your responses against those listed at the end of this study unit.

1. List the six types of combat support available to the infantry battalion in an antiarmor enviroment.

a. _____
b. _____
c. _____
d. _____
e. _____
f. _____

2. List the five types of combat support organic to the Marine infantry division.

a. _____
b. _____
c. _____
d. _____
e. _____

Answers to Study Unit #3 Exercises

Work Unit 3-1.

1. e
2. h
3. b
4. d
5. g
6. a
7. c
8. f

Work Unit 3-2.

1. i
2. d
3. h
4. c
5. g
6. b
7. f
8. a
9. e

Work Unit 3-3.

1. Engagement of threat armor at the greatest possible range and increase the volume of fire as the threat force draws nearer.

2. a. M
   b. H
   c. H
   d. L
   e. L
   f. L
   g. H
   h. H
   i. H
   j. H
   k. H

3. a. Obstacles and barriers
   b. Smoke
   c. Illumination
   d. Electronic warfare

4. a. Concentric and ever-increasing volume of fires
   b. Massed-surprise fires

Work Unit 3-4.

Note: Give credit for reasonably similar wording.

1. a. Detected but contact not imminent
   b. Contact is imminent
   c. Friendly units are under attack
   d. Landing force is seriously endangered

2. a. "tank alert"
   b. warning condition
   c. call sign(s)
   d. size of threat unit
   e. location and direction
   f. time

3. a. tanks clear
   b. precedence
   c. time
   d. authentication

Work Unit 3-5.

The following can be listed in any order

(F) 1. Rifle, 5.56-mm, M16
(D) 2. Mortar, 60-mm, M224
(A) 3. Mortar, 81-mm, M29A1
(E) 4. Assault Weapon System (Dragon), M47
(G) 5. Machinegun, 7.62-mm, M60
(B) 6. 66-mm HEAT Rocket, M72A2
(H) 7. Multi-shot Portable Flame Weapon, M202
(C) 8. Launchers, Grenade, 40-mm, M203

Work Unit 3-6.

1. a. Assault Amphibian
   b. Artillery
   c. Aviation
   d. Combat Engineer
   e. Reconnaissance
   f. Tank
2. a. Assault Amphibian
   b. Artillery
   c. Combat Engineer
   d. Reconnaissance
   e. Tank

STUDY UNIT 4

SMALL UNIT ANTIARMOR OPERATIONS, THE ARMOR KILLER TEAM

STUDY UNIT OBJECTIVE: UPON SUCCESSFUL COMPLETION OF THIS STUDY UNIT YOU WILL IDENTIFY THE BASIC ASPECTS OF ANTIARMOR OPERATIONS, AND THE TYPES OF SMALL UNIT ANTIARMOR OPERATIONS. IN ADDITION, YOU WILL IDENTIFY ELEMENTS OF AND THE STEPS USED BY AN ARMOR KILLER TEAM, THE DEFENSIVE TECHNIQUES USED TO DEFEAT ARMOR, AND THE PRINCIPLES AND TECHNIQUES OF EMPLOYMENT FOR ANTIMECHANIZED WEAPONS.

Work Unit 4-1. BASIC ASPECTS OF ANTIAMOR OPERATIONS

STATE THE THREE BASIC ASPECTS OF ANTIARMOR OPERATIONS

Operations against hostile forces may be determined by the enemy's ability to mass large tank forces throughout the battle area. The armor killer team must be prepared to use all means available to destroy hostile mechanized armor. To defeat armor the armor killer team must have effective weapons. The entire antiarmor complement of weapons, air, artillery, naval gunfire, TOWS, Dragons, LAWS and field expedient weapons, must be able to destroy or disable enemy armor.

To achieve effectiveness the men who use these weapons must be highly trained and disciplined, also each member of an armor killer team must have confidence in his weapon or weapon system and confidence in himself.

EXERCISE: Answer the following questions and check your answers against those located at the end of this study unit.

1. State the three basic aspects of antiarmor operations.

a. _____
b. _____
c. _____

Work Unit 4-2. OFFENSIVE ANTIARMOR TACTICS

LIST THE THREE TYPES OF OFFENSIVE SMALL UNIT ANTIARMOR TACTICS

The first echelon of the enemy's defense is the motorized rifle division. The key word is motorized, which implies armor. In offensive antiarmor operations, the tactics that will defeat armor are the antiarmor ambush, raid, and the forces left in contact after the enemy assault.

Ambushes can be employed by infantrymen, both as an expedient method of armor destruction and as a means by which small groups can adequately protect likely armor approaches. It is an excellent method of covering dead space in sectors of fire, of limiting armor movement in close or wooded country, and harassing small armored reconnaissance vehicles. Ambushes should employ light (LAWS) and medium (Dragons) antiarmor weapons. They should be positioned in those areas in which armor will be channeled. A two-man team, each man armed with an antitank weapon can ambush and destroy one of two moving tanks with almost 100 percent certainty and with little danger to themselves. Ambush teams may be emplaced and extracted by helicopter to achieve surprise and range. Careful selection of firing positions, good timing, and a planned route of withdrawal, are essential in an antiarmor ambush. All-around security must be established at the ambush site and an effective and practical method of communications must be maintained between all members of the ambush. Detailed rehearsals should be conducted if the time is available.

The second type of offensive small unit antiarmor operation is the raid. A raid is an attack on an enemy position when he least expects it. An antiarmor raid is conducted for the purpose of destroying armor behind enemy lines.

The organization of all raids includes a headquarters and security element, an assault element, and the support element. The headquarters and security element and the support element are not directly influenced by the antiarmor raid; their composition remains the same. However, the assault element's organization is determined entirely by the patrol's specific mission. For example, the number of men, weapons and the types of weapons will be assigned according to the mission.

An antiarmor raid differs from other raids in that the mission is solely to destroy enemy armor and not to secure the objective, capture prisoners, liberate personnel, or sieze equipment. An antiarmor raid uses its assets in a violent concentration of fire power on enemy armor to destroy it, then break off the attack and move to the raid rallying point where casualties receive attention before moving to friendly lines or to another raid.

The third type of offensive small unit antiarmor tactic is the use of forces left in contact. These forces are not stranded or left behind accidentally; they are directed to stay behind to destroy enemy armor. However they may get separated as a result of enemy action and become members of the force left in contact. There should be a unit SOP for units and individuals who are isolated. They will normally remain concealed and otherwise avoid detection until opportunity directs them to concentrate and form armor killer teams using organic weapons and field expedient antiarmor weapons. After destroying as many targets of opportunity as possible they reform and attempt to rejoin their unit.

EXERCISE: Answer the following questions and then check your answers against those located at the end of this study unit.

1. List the three types of offensive small unit antiarmor tactics

a._____
b._____
c._____

Work Unit 4-3. THE MAKE-UP OF AN ARMOR KILLER TEAM

NAME THE THREE ELEMENTS OF AN ARMOR KILLER TEAM.

Use of armor killer teams is one method infantrymen can use to destroy large-scale tank/infantry assaults. An excellent armor killer team is the marine rifle squad that is trained as a unit in armor killer operations. Each team should consist of one rifle squad with attachments. The attachments may vary as the armor threat dictates; however, three basic elements will always be present.

The command and control element consists of a team leader armed with an M-16/M-202 and one M-72 (LAW) and a radio operator with a PRC 77 and armed with an M-16. The mission of this element is to provide a plan of attack, an area of engagement, an extraction plan, as well as leadership during contact. Secondly, this element will maintain communications with the parent unit and report any intelligence information.

The support and security element can consist of two fireteams and a machinegun team as a maximum and only one fire team as a minimum. If only one fire team is used, two members of the team should be armed with automatic weapons (M-16s) while the other members of the team should be armed with M-203's. With the exception of the machinegun team all members of any support and security element should carry two M-72 LAWS. The support and security element's functions are to provide protective fires for the armor destroyer elements, to separate enemy armor from their accompanying infantry, and to provide security for the entire team within its capability during the attack and withdrawal.

The armor destroyer element's mission is to destroy, immobilize, or damage armored vehicles. This team should have six men: two Dragon gunners, two Dragon assistant gunners and two demolition men. The gunners and assistant gunners are armed with one M-47 Dragon, one M-72 LAW, and an M-16 each. The demolition men are armed with two antitank mines, smoke, incendiaries, electric and nonelectric detonation devices, one M-72 LAW, and one M-16 each.

The success of an armor killer team depends on achieving suprise, on being thoroughly trained in its responsibilities, and on thinking like the enemy and what their action might be.

EXERCISE: Answer the following questions and then check your answers against those located at the end of this study unit.

1. Name the three elements of an antiarmor team

a._____
b._____
c._____

Work Unit 4-4. OPERATIONS OF THE ARMOR KILLER TEAM

LIST THE FIVE STEPS USED BY AN ARMOR KILLER TEAM TO DEFEAT ARMOR.

Armor killer teams have the mission of actually attacking armored vehicles. The armor killer team should use these five steps in defeating armor.

a. Separate from the infantry. The infantry who accompany tanks and other armor act as their eyes because the visibility of the men inside is much reduced. To separate the infantry, the support/security element engages them with small arms fire.

b. Channel/separate from other armor. By using natural terrain and manmade obstacles, the team separates armored vehicles so that they cannot support each other.

c. Blind. The armored vehicles can be blinded by using smoke, starting a fire, and other blinding agents to further reduce the vision of the armored vehicles and thus slow them down.

d. Stop. Armor can be stopped with the use of mines, ditches, downed trees, and any other means that are available to you on the battlefield.

e. Destroy. Armor is destroyed by using any resources available. If you can use organic weapons such as Dragons, LAWS, or antitank mines, use them first. Using any resource available was noted in the following award of the distinguished service Cross to Cpl. R. C. Carroll for action against the enemy in the vicinity of Younsan, Korea, on 15 August 1950.

"At approximately 0300 hours on 15 August 1950, four enemy tanks penetrated the defense perimeter of the 2nd Battalion and succeeded in disrupting communications and destroying several supply points. Obtaining a 3.5 inch rocket launcher, Cpl Carroll crawled to within 50 yards of the lead tank and succeeded in immobilizing it. The three remaining tanks withdrew. Armed with a hand grenade, Cpl. Carroll charged the disabled tank which was still firing its guns. Unable to locate an opening through which to drop his grenade he removed an axe and sledgehammer strapped outside the tank and used them to force open the turret hatch cover. As the hatch cover flew open, an enemy stood up firing a submachinegun. In the face of this sudden attack, Cpl. Carroll was forced off the tank. Procuring a five gallon can of gasoline from a nearby disabled vehicle, Cpl Carroll again mounted the tank and poured the fuel around the turret then set it on fire destroying the tank and the crew."

EXERCISE: Answer the following questions and then check your answers against the list located at the end of this study unit.

1. List the five steps used by an armor killer team to defeat armor.

a._____
b._____
c._____
d._____
e._____

Work Unit 4-5. DEFENSIVE TECHNIQUES USED TO DEFEAT ARMOR

LIST THREE DEFENSIVE TECHNIQUES USED TO DEFEAT ARMOR.

Enemy doctrine stresses the offense as the main element of its combat actions: the concentrations of numerically superior forces and fire power for a combination of frontal attacks, enveloping maneuvers and deep offensive thrusts into rear areas with armor heavy combined forces.

Your defensive role as an armor killer unit is to destroy enemy armor. However, in the defense you will normally stay in one fighting position rather than maneuver. Being in one position for any length of time means digging in.

Special considerations for antiarmor defensive positions are, fighting holes, use of cover and concealment, terrain, and using natural and manmade obstacles.

Fighting holes (fig 4-1) have some basic requirements in that they must provide you with protection, they must allow you to engage the enemy, and they must be concealed. A special consideration is protection from the backblast of antiarmor weapons.

Protection from direct and indirect enemy fires is obtained by using natural and manmade materials thick enough to stop small arms fire and fragmentations from indirect fires. Trees, rocks, logs, and earth are natural barriers. Metal ammunition cans and wooded ammunition boxes filled with rocks and earth provide excellent protection; they must be carefully camouflaged, however. Another aspect of gaining protection is to make the position as small as possible. The smaller the position, the less likely are enemy rounds, grenades, or fragments to get into it. Figure 4-1 shows a position using natural and manmade material.

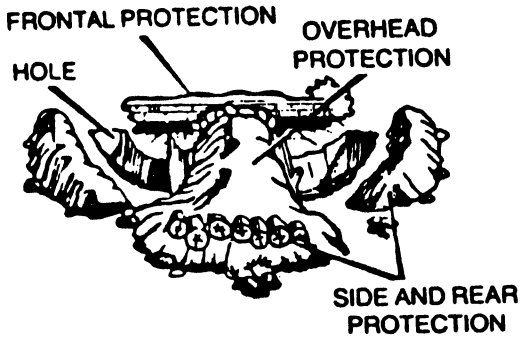


Fig 4-1. Fighting hole.

Your position should allow you to see and fire to the front when you are not receiving effective direct fire. It should also provide frontal cover so that when you receive effective direct fire you can move behind the cover and deliver fire to the oblique (fig 4-2). Your position should provide overhead cover so that you can continue to fire your weapon when indirect fire lands near your position.

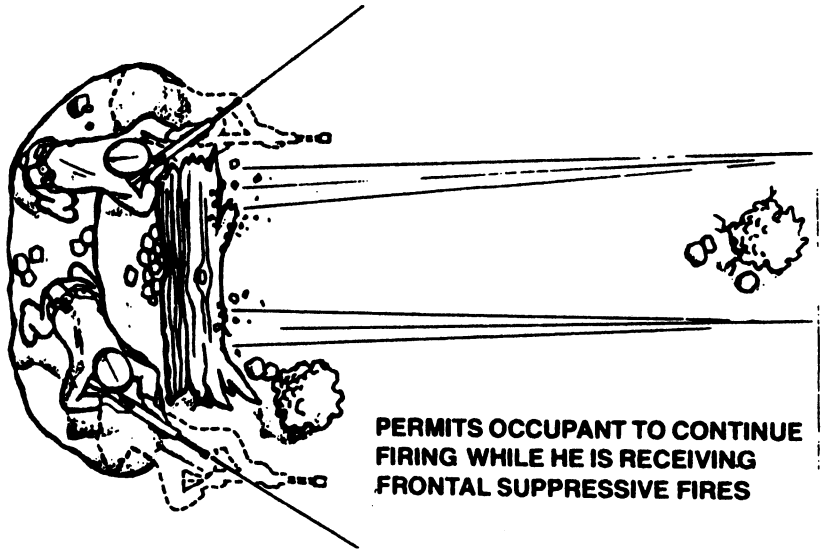


Fig 4-2. Firing in the oblique

You can use all the protection available and still be hit if the enemy can see you. Therefore you must conceal your position. Conceal your position so well that the enemy will have difficulty seeing it even after he gets within handgrenade range. In concealing your position it should be invisible from the front. Do not disturb the natural cover and concealment. Natural concealment is much better than manmade because it is readily available, more difficult for the enemy to pinpoint, and, if not cut live it need not be replaced. Don't forget the use of camouflage on your face, arms, hands, clothes, weapons, and equipment so you and your gear will blend in with your position.

Defensive antiarmor techniques will also include the use of terrain, weather, and obstacles to your advantage.

Armored vehicles, because of their dependence on hard trafficable surfaces, are especially vulnerable to obstacles. Careful assessment of existing terrain and weather conditions is necessary to obtain maximum natural channeling of armored vehicles. Manmade obstacles can reinforce or augment natural obstacles on likely armored approaches. Obstacles should be constructed in depth and covered by fire. Mines should be used in conjunction with obstacles to prevent the obstacles from being removed or crossed.

Natural obstacles have a direct relationship to antiarmor operations. Most tracked vehicles cannot climb a grade of 60 degrees and if the terrain has boulders, trees and if the soil is soft their climbing ability is much reduced. Groups of trees 10-14 inches in diameter, ditches, streams, ravines, and gullies at least 14 feet wide and 8 feet deep are very effective natural obstacles.

Manmade obstacles should be constructed with the same mobility restricting effects as natural obstacles. Study the terrain and natural obstacles and copy them. Take advantage of the fact that armored vehicles will normally avoid manmade obstacles.

EXERCISE: Answer the following questions and then check your answers against those located at the end of this study unit.

1. List three defensive techniques used to defeat armor.

a. _____
b. _____
c. _____

Work Unit 4-6. PRINCIPLES OF EMPLOYMENT

LIST SIX GENERAL PRINCIPLES FOR POSITIONING OF DIRECT FIRE ANTIMECHANIZED WEAPONS.

LIST FOUR TYPES OF POSITIONS FOR ANTIMECHANIZED WEAPONS.

LIST THE SIX STEPS USED IN OCCUPYING A POSITION USING A TOW WEAPON SYSTEM.

There are certain antimechanized principles which govern the successful use of organic and attached antimechanized weapons by a company, platoon, or squad. This unit will normally have various antimechanized weapons to employ and they must be employed for fullest effect. As with all weapons systems, antiarmor weapons have advantages and disadvantages. Certain procedures should be followed when employing these weapons.

General principles for positioning are:

a. Use the terrain for cover and concealment from air and ground observation.

b. Position antimechanzied weapons in areas which can provide good fields of fire out to the maximum effective range. This will make best use of the fires of each weapon system and provide a measure of protection to the crew from enemy fire (fig 4-3).

c. Position antimechanized weapons to engage the enemy on his flanks. Frontal fires should be avoided as a general rule. When advancing, the threat tank firepower and observation is generally to the front, making it difficult for the enemy to detect a weapon firing from the flank or rear (fig 4-3).

d. Employ weapons so they are mutually supporting (fig 4-4). This mutual support provides a degree of protection for weapons crews by ensuring complete and continuous coverage of threat armored vehicles. Mutual support consists of two elements.

(1) Employ antimechanized weapons within particular sections so they can engage threat armored vehicles assaulting other antimechanized weapons positions.

(2) Employ antimechanized weapons so their fires interlock with each other.

e. Integrate with nearby infantry for security. Antimechanized weapons are vulnerable not only to tanks, but also to enemy infantry.

f. Avoid conspicuous terrain features. Terrain features such as hill tops and road junctions are often used as registration points for enemy indirect fire weapons (fig 4-5).

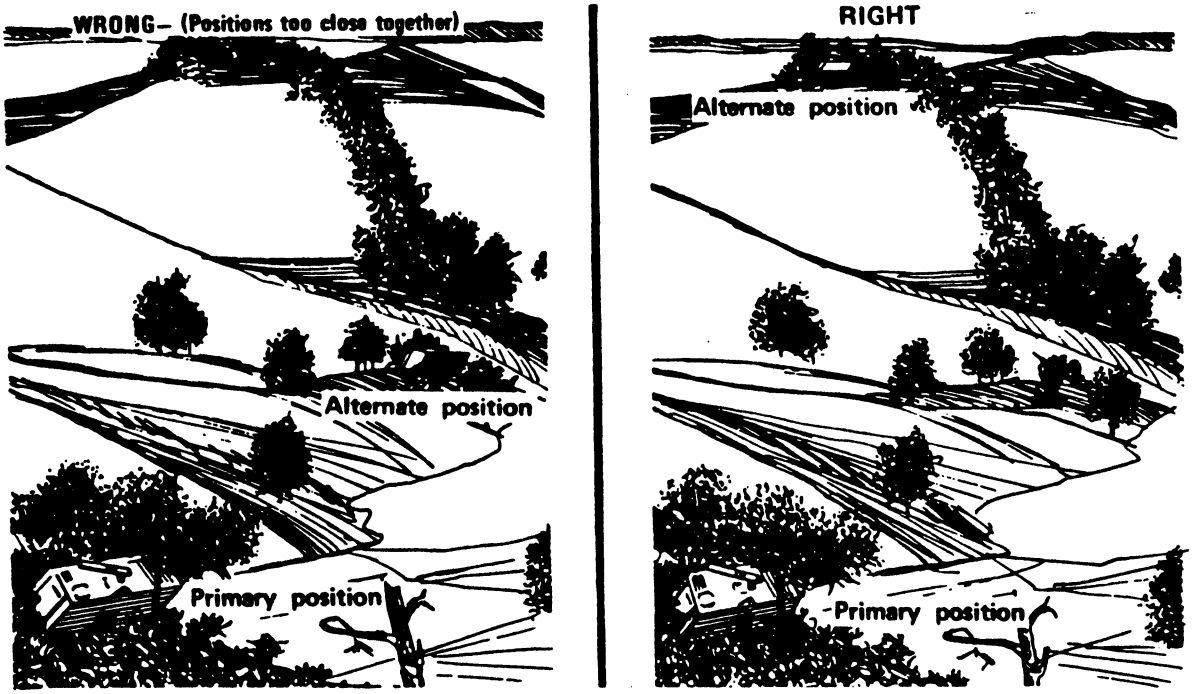


Fig 4-3. Positioning of weapons.

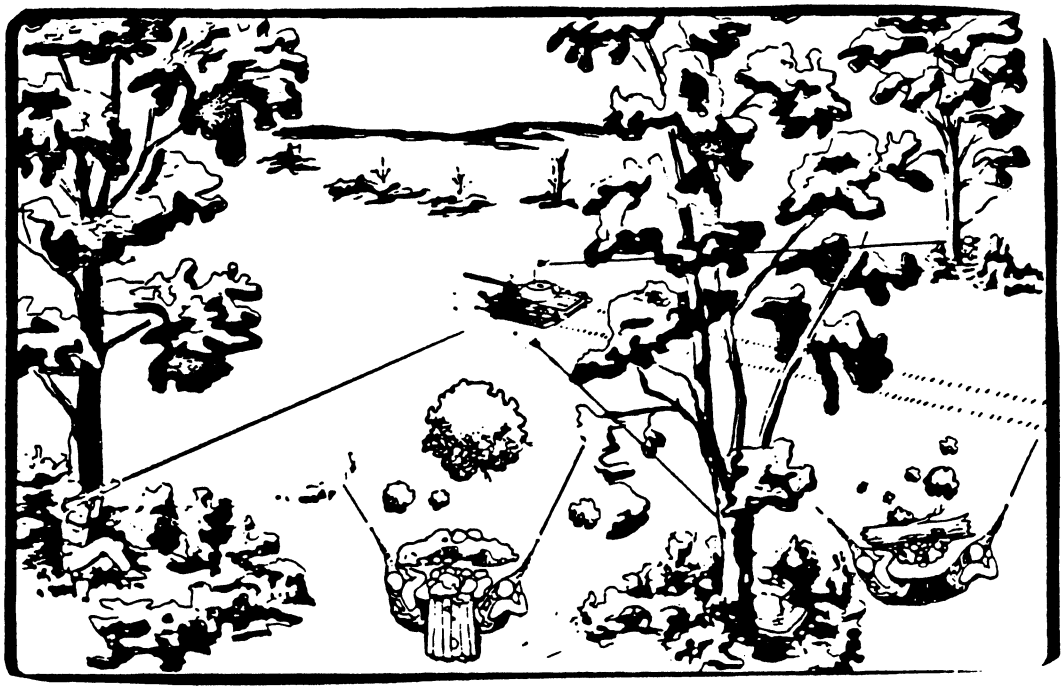


Fig 4-4. Mutually supporting.

Fig 4-5. Avoiding conspicuous terrain features.

In most situations, antimechanized weapons will be assigned primary firing positions and as many alternate firing positions as necessary to cover their assigned sectors of fire. The large signature effects such as dust from backblast, flash, and noise of many of these weapons dictates that they be displaced frequently. Whenever possible, TOW and Dragon primary and alternate firing positions should be placed at least 300 meters apart. This will prevent the fires of enemy artillery that may be firing on the primary position from impacting on the alternate position.

While alternate positions allow for coverage of the same sector of fire as the primary position, supplementary positions must always be chosen where appropriate. These positions allow for coverage of different sectors of fire such as the flank or rear. The same care should be given to the selection of primary positions. Well-covered and concealed routes between positions are essential to ensure rapid displacement and to prevent detection of movement (fig 4-6).

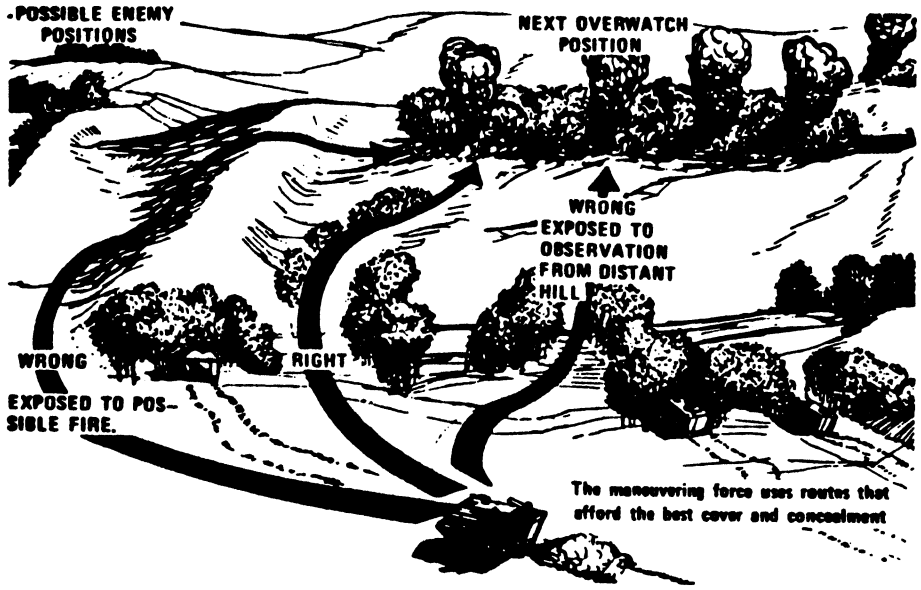


Fig 4-6. Well-covered and concealed routes.

When the firing position has no natural concealment from enemy ground or aerial observation, and it is not practical to camouflage the position by artificial means, the weapon should be positioned in a nearly covered and concealed location (fig 4-7) until it actually engages targets from primary or alternate positions. When the weapon is located in a hide position, an observer from the squad or section remains in a firing position; when targets appear, he calls the weapon forward and points out the targets to the gunner.

Fig 4-7. Nearly covered and concealed location.

A firing position must be occupied with care to avoid detection. Careless occupation can compromise the best of camouflaged positions. Rapid movement into firing positions should be avoided, especially in dusty areas or where vegetation can be disturbed. In the case of vehicle-mounted, heavy antimechanized weapons, such as TOW, the following procedure should be used:

a. Approach the position from the rear.

b. Stop short of the actual position in a concealed location.

c. Section and squad leaders should dismount and move forward to reconnoiter the area. During the reconnaissance, squad leaders must select exact firing positions, determine if the weapons should be employed on their vehicles or ground mounts, and select a route into the position.

d. Firing positions and routes should preclude enemy observation.

e. Weapons are guided into position using hand and arm signals.

f. Eliminate all signs of occupation to disguise the position from enemy observation. Camouflage the position.

EXERCISE: Answer the following questions and check your answers against those located at the end of the study unit.

1. List the six general principles for positioning direct fire antimechanized weapons.

a._____
b._____
c._____
d._____
e._____
f._____

2. List the four types of positions for antimechanized weapons.

a._____
b._____
c._____
d._____

3. List the six steps used to occupy a position using the TOW weapon system.

a._____
b._____
c._____
d._____
e._____
f._____

Work Unit 4-7. EMPLOYMENT TECHNIQUES

LIST THE FOUR ESSENTIAL ELEMENTS FOR TARGET ENGAGEMENT.

STATE THE PRINCIPLE FOR PRIORITY OF ENGAGEMENT.

COMPUTE TIME OF FLIGHT FOR THE DRAGON AND TOW.

Essential to successful target engagement are four factors: (1) acquisition, (2) identification, (3) designation, and (4) determination of whether a good shot is possible or not. All members of antimechanized weapons sections should be trained in methods of acquisition, priorities of engagement, and fire control.

When engaging armored formations, the unit must attempt to separate the tanks from the accompanying infantry by using small arms, mortar, and artillery fire. If the enemy tanks are accompanied by armored personnel carriers (APC's) or infantry combat vehicles, a unit should use the principle of engaging the most dangerous target first. Unit leaders, through fire control and fire discipline, must ensure that weapons crews distribute their fires in sector while maintaining antiarmor fires throughout the unit's zone.

There are certain easily applied methods of fire control that will aid the unit leader in distributing his fire.

Fire patterns may be determined from the type of formation the enemy is using. If the enemy force is advancing in column, the unit leader may direct or have previously coordinated that one weapon begin firing at the front vehicle, one at the middle, and one at the rear of the column (fig 4-8).

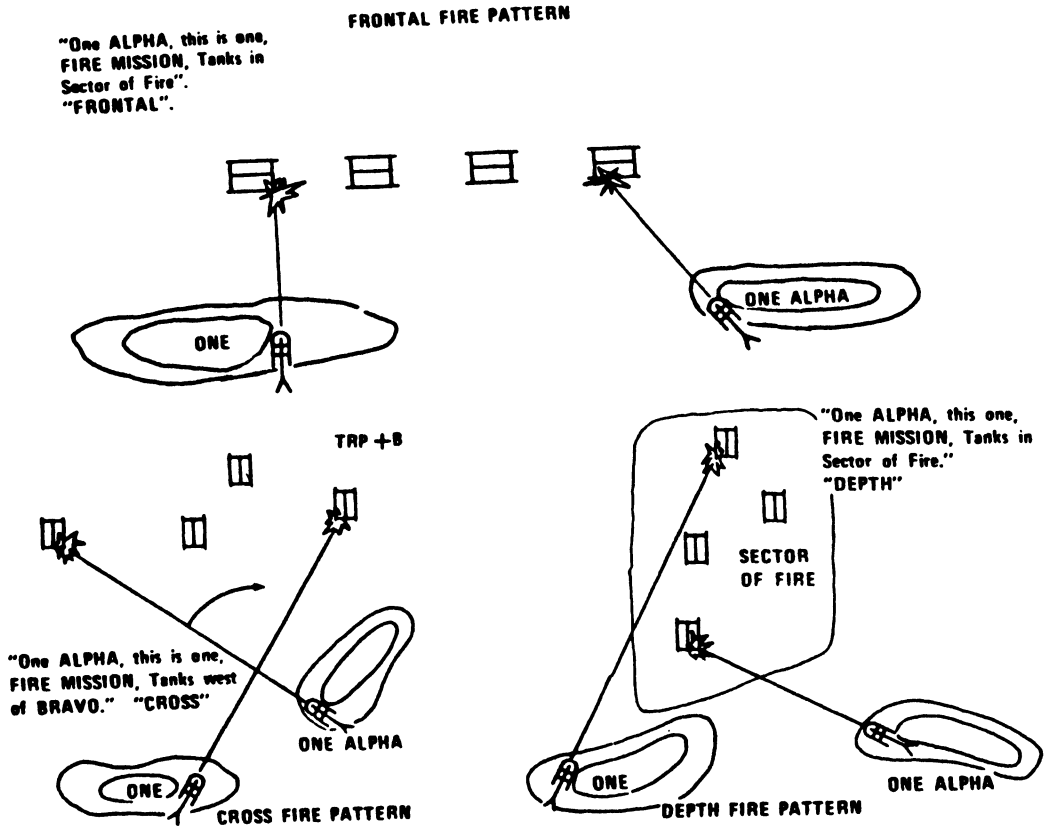


Fig 4-8. Fire patterns.

A sector of fire is an area limited by boundaries, assigned to a unit or a weapon, to be covered by fire (fig 4-9).

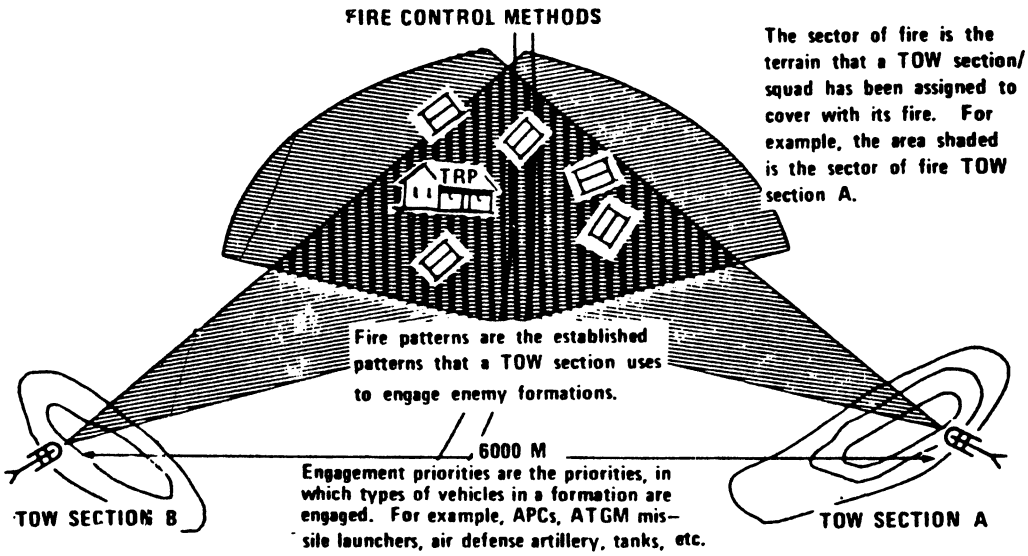


Fig 4-9. Sector of fire.

A target reference point (TRP) is an easily recognizable point on the ground, either natural or manmade, that can be seen by all antimechanized weapon gunners firing into the sector. TRP's are normally referenced by a letter or numbering system and used in controlling and shifting fires (fig 4-10).

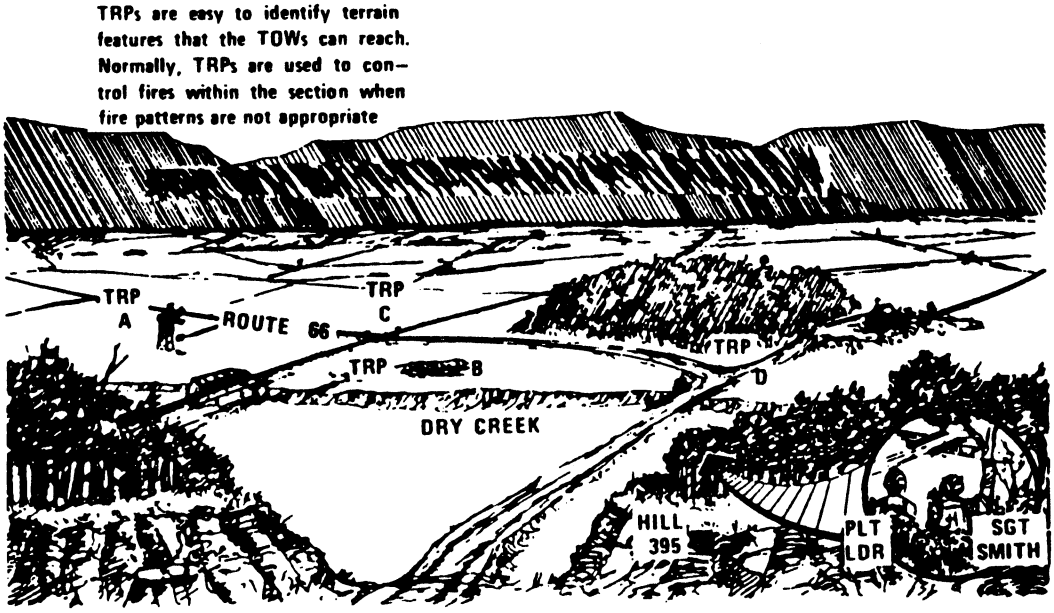


Fig 4-10. Target reference points (TRP's)

When tracking moving targets, antimechanized weapons, particularly the wire-guided missiles, must be able to track the target until missile impact. Gunners must be aware of the time it takes the missile to reach various ranges after they squeeze the trigger (TOW: 17 seconds to 3000 meters. Dragon: 11 seconds to 1000 meters). A good rule of thumb to follow is to always assume "worst case" conditions. Gunners should always consider that the enemy is moving at top speed, approximately 10 meters per second. The TOW missile travels an average of 200 meters per second, while the Dragon missle travels approximately 100 meters per second. Therefore, an estimation of how long it will take the missile to reach the target can be made. A target must be exposed for at least that long.

Based on this analysis, if a gunner detects a target moving between two covered areas, he must determine that the target will be exposed long enough to be hit. In figure 4-11, the gunner wasted a missile because the tank was able to cross the exposed area in less time (6 secs) than it took the missile to reach the area (8 secs).

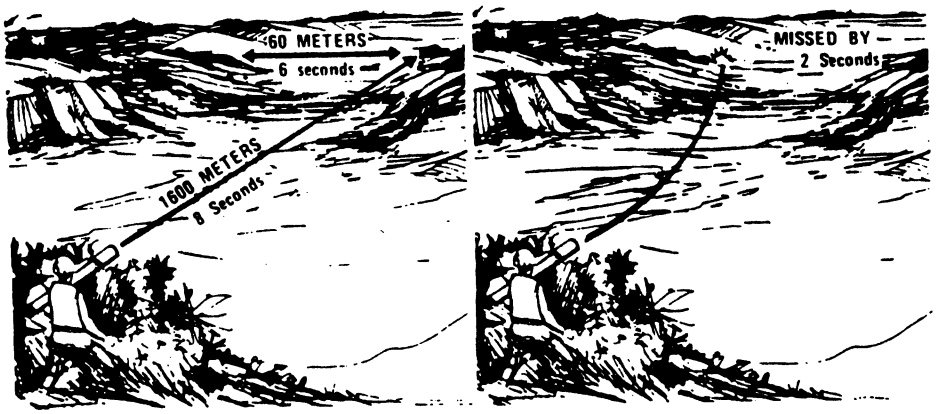


Fig 4-11. Moving targets

All infantry antimechanized weapons produce a backblast when fired and must be used with caution in built-up areas. These weapons cannot be fired from inside unvented or completely enclosed buildings. However, they can be fired from inside a building under the following conditions:

a. The building is of sturdy construction (masonry, frame construction).

b. The ceiling is at least 7 feet high.

c. There is at least 20 square feet of ventilaton (an open door 7' by 3' will suffice).

d. Glass is removed from all room openings.

e. Everyone in the room is forward of the breech of the weapon.

f. Everyone must wear ear protection.

g. Room size must be 17' by 24' for TOW, 12' by 15' for Dragon, 4' clearance from back wall for LAW.

The platoon leader or supported unit commander designates general firing position areas, and the squad leader selects the exact location for the antimechanized weapon. The characteristics of firing positions are:

a. Gunner observation of assigned sector.

b. Adequate observation and fields of fire.

c. Cover for the weapon system.

d. Mask clearance.

e. Security (proximity to friendly troops).

f. Good concealment from ground and aerial observation.

g. Good concealment routes into and out of the position.

h. Capabilitly to employ flanking or oblique fire.

i. Backblast area.

Ideally, positions are selected from which squads can perform both their primary and secondary missions. If this is not possible, positions which permit the weapon to perform its primary mission take priority. Alternate and supplementary positions are also selected and prepared. Both primary and alternate positions should provide for mutual support between antimechanized weapons.

EXERCISE: Answer the following questions and check your answers against those located at the end of this study unit.

1. List the four essential elements for target engagement.

   a._____
   b._____
   c._____
   d._____

2. Write the principal for priority of engagement.

   _____

3. Write the definition of sectors of fire.

   _____

4. Write the definition of a target reference point.

   _____

5. Compute the time of flight for the Dragon and TOW.

   Dragon

   Range 1000 meters
   Time of flight_____

   TOW

   Range 3000 meters
   Time of flight _____

6. List the seven conditions under which infantry antimechanized weapons can be fired from inside of buildings.

a. _____
b. _____
c. _____
d. _____
e. _____
f. _____
g. _____

7. List nine firing positon characteristics for antimechanized weapons.

a. _____
b. _____
c. _____
d. _____
e. _____
f. _____
g. _____
h. _____
i. _____

Answers to Study Unit #4 Exercises.

Work Unit 4-1

1. a. effective weapons
   b. training and discipline
   c. confidence

Work Unit 4-2

1. a. ambush
   b. raid
   c. forces left in contact

Work Unit 4-3

1. a. command and control element
   b. support and security element
   c. armor destroyer element

Work Unit 4-4

1. a. separate
   b. channel
   c. blind
   d. stop
   e. destroy

Work Unit 4-5

1. a. fighting holes
   b. cover and concealment
   c. terrain and obstacles

Work Unit 4-6

1. a. use terrain for cover and concealment
   b. coordinate fields of fire to maximum effective range
   c. engage the enemy on his flanks
   d. mutually supporting
   e. integrate with infantry
   f. avoid conspicuous terrain

2. a. primary
   b. alternate
   c. supplementary
   d. hide

3. a. approach from the rear
   b. stop short of the actual position
   c. section/squad leader reconnaissance
   d. firing positions and routes should preclude enemy observation
   e. use of hand and arm signals to guide weapons into position
   f. use of camouflage

Work Unit 4-7

1. a. acquisition
   b. identification
   c. designation
   d. determination

2. engage the most dangerous first

3. an area limited by boundaries assigned to unit or weapons

4. an easily recognizable point on the ground

5. Dragon 11 seconds
   TOW 17 seconds

6. a. sturdy construction of building
   b. ceiling 7 feet high
   c. 20 square feet of ventilation
   d. remove all glass
   e. everyone forward of the breech
   f. ear protection
   g. TOW 17' by 24'
      Dragon 12' by 15'
      LAW 4' clearance from back wall

7. a. gunners observation of assigned sector
   b. observation and fields of fire
   c. cover
   d. mask clearance
   e. security
   f. concealment from air and ground
   g. concealment of routes
   h. flanking and or oblique fire
   i. backblast area

ANTIARMOR OPERATIONS

Review Lesson

Instructions: This review lesson is designed to aid you in preparing for your final examination. You should try to complete this lesson without referring to the course text or other materials, but if you find that you must use the materials to answer some of the questions, do so. The enclosed answer sheet must be filled out according to the instructions on the back of the sheet and mailed to MCI using the envelope provided. If you answer any questions incorrectly, they will be listed with the appropriate reference on a feedback sheet which will be mailed to your commanding officer with your final exam. You should study the reference material for the questions you missed before taking the final exam.

A. Multiple Choice: Select the ONE answer which BEST completes the statement or answers the question. After the corresponding number on the answer sheet, blacken the appropriate box.

Value: 1 point each

1. The three dominant characteristics of modern battle are the killing power and sophistication of modern weapons, expected shorter duration, and

   a. high intensity.
   b. mass.
   c. low intensity.
   d. probable location.

2. The three major characteristics of modern weapons are their increased

   a. range, dependability, and size.
   b. accuracy, range, and destructiveness.
   c. speed, size, and range.
   d. power, size, and speed.

3. Throughout this course all doctrine, equipment, vehicles and tactics of Soviet and Warsaw Pact Nations are referred to by the word(s)

   a. enemy.
   b. opposing forces.
   c. threat.
   d. third world.

4. While threat tanks are more technically advanced, their main gun rounds are not

   a. interchangeable.
   b. effective.
   c. reliable.
   d. modern.

5. One shortcoming of the BMP is that the main gun does not have a stabilizer and can't shoot

   a. HE rounds.
   b. direct fire.
   c. accurately on the move.
   d. over water.

6. Threat mechanized forces favor mass, speed, and shock effect but leave their _____ exposed.

   a. rear
   b. flanks
   c. hatches
   d. tracks

7. Which of the following armored vehicles has good cross country mobility and armor protection and provides shock action and firepower on the modern battlefield?

   a. Amphibious assault vehicle
   b. Jeep
   c. Tank
   d. Armored car

8. Which of the following armored vehicles is defined as a lightly armored, tracked, infantry assault carrier that mounts a weapon or weapon system?

   a. Mechanized infantry combat vehicle
   b. Tank
   c. Self-propelled artillery
   d. Assault gun

9. An assault gun is an armored vehicle similar to a tank but lighter in weight and lacking

a. a cannon.
b. armor protection.
c. a turret.
d. mobility.

10. Which of the following armored vehicles is defined as a lightly armored, wheeled, motor vehicle mounting automatic weapons?

a. Assault gun
b. Self-propelled artillery
c. Armored car
d. Tank

11. Which of the following armored vehicles is a full tracked, armored vehicle mounting a field gun or howitzer?

a. Self-propelled artillery
b. Tank
c. Assault gun
d. Armored car

12. Three tanks used by threat forces are

a. T62, BRDM, and M1973.
b. T62, T72, and T80.
c. BTR-50P, ASU-85, and M1974.
d. BTR-152, ASU-57, and ASU-85.

13. Which of the following is an infantry combat vehicle employed by threat forces?

a. M1974
b. BMP
c. T-62
d. ASU-85

14. Which of the following are assault guns used by the threat forces?

a. BMP, BMD, BRDM
b. SU-100, ASU-85, ASU-57
c. BRDM-2, M1973, T-62
d. BTR-50, T-72, T-80

15. What is the armored car used by threat forces?

a. M1974
b. T-72
c. BRDM
d. ASU-57

16. Which of the following self-propelled artillery pieces are used by threat forces?

a. M1973 and M1974
b. M107 and T-62
c. BRDM and BMP
d. ASU-57 and ASU-85

17. Which of the following are U. S. tanks.

a.	b.	c.	d.
Chieftain	M48	AMX-13	Leopard
AMX-13	M48A3	AMX-30	Scorpion
Leopard	M60	M60A2	Centurion
M48	M60A1	M551	Chieftain
AMX-30	M60A2	Centurion	M48
Scorpion	M1	Leopard	M1
M60	M551	Scorpion	AMX-13

18. Which of the following tanks are English?

a. Leopard, AMX-13, AMX-30
b. AMX-13, AMX-30, M551
c. Centurion, Scorpion, Chieftain
d. M60, M60A1, M60A2

19. Which of the following French tanks are used by a Western Nation?

a. Chieftain, Leopard, Centurion
b. M60A1, M1, M551
c. M60, M48, M551
d. AMX-13, AMX-30, AMX-13 with SS-11 missiles

20. Which of the following is a West German tank?

a. Centurion
b. Scorpion
c. Leopard
d. Chieftain

21. Forces optimized in organization and equipment to conduct offensive operations making full coordinated use of all weapons and weapons systems is the definition of a _____ force.

a. landing
b. combined arms
c. defensive
d. operational

22. Which of the following is a characteristic of a cupola?

a. automatic weapon
b. hatch
c. location
d. size

23. Which of the following is <u>not</u> a characteristic of a tank turret?

a. Shape
b. Location
c. Size
d. Housing for main gun

24. Which of the following is <u>not</u> a gas evacuating system for an armored vehicle?

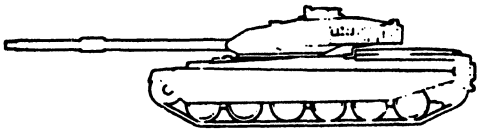
a. Bore evacuator
b. Muzzle brake
c. Blast deflector
d. Thermal sleeve

25. There are two general types of suspension systems associated with armored vehicles. They are the torsion bar and

a. Kutzov
b. Chamberlain
c. Christie
d. Leyland

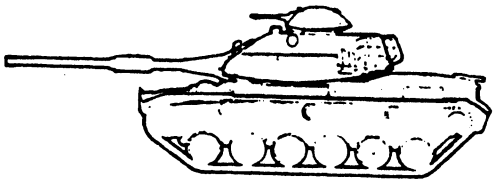
26. For items 26-37 select the name or model number of the tank or vehicle illustrated. Blacken the appropriate letter on the answer sheet.

a. Centurion
b. BMD
c. Chieftain
d. Kanone



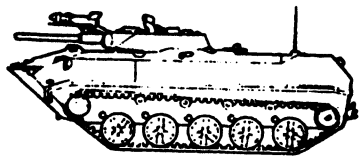
27.

a. M60A1
b. ZSU-57-2
c. Leopard
d. BMD



28.

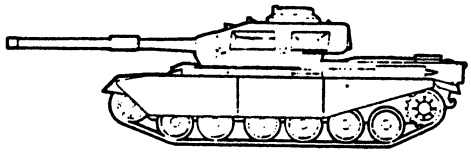
a. M60A1
b. Leopard
c. Chieftain
d. BMD



29.

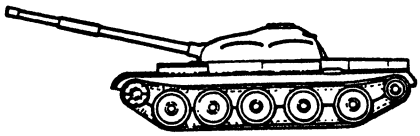
a. T72
b. T54/55
c. T99
d. ASU-85

30.



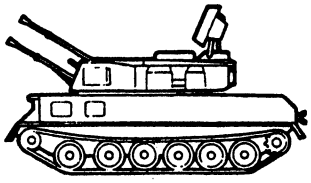
a. Centurion
b. Chieftain
c. Kanone
d. ZSU 23-4

31.



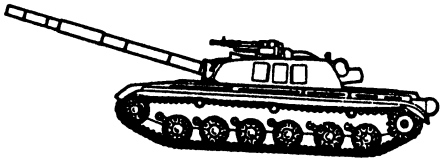
a. BMD
b. T64
c. T62
d. T54/55

32.



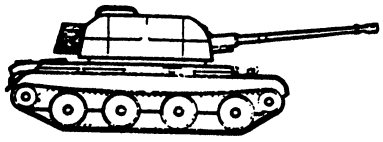
a. Leopard
b. BMD
c. ZSU-57-2
d. ZSU-23-4

33.



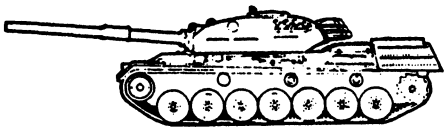
a. M60A1
b. T62
c. T72
d. M1911a1

34.



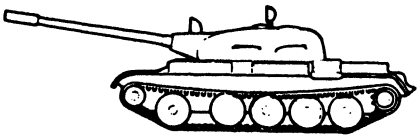
a. ZSU-57-2
b. M60A1
c. ASU 85
d. M747

35.



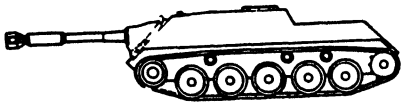
a. BMD
b. ZSU-57-2
c. Leopard
d. ZSU-23-4

36.



a. M106
b. T72
c. T62
d. T54/55

37.



a. Kanone
b. C5A
c. M60A1
d. BMD

38. The Chieftain tank is produced by

a. U.S.
b. Russia
c. England
d. America

39. An antiaircraft weapon of the Soviets is the

a. APC-1
b. T72
c. ASU 85
d. ZSU 23-4

40. The M60A1 tank is produced by the

a. Russians
b. U.S.A.
c. British
d. Germans

41. Which antimechanized characteristic increases the requirement for mobility?

a. Key terrain
b. Rapid massing
c. Short reaction time
d. Control and coordination

42. Which characteristic of antimechanized operations dictates when and where friendly and threat mechanized forces can be used?

a. Fuel
b. Ammo
c. Key terrain
d. Spare parts

43. What characteristic of antimechanized operations focuses all available antimechanized weapons at the point of decision?

a. Key terrain
b. Total commitment
c. Short reaction time
d. Centralized control

44. The characteristic of antimechanized operations that does not allow time for lengthy plans is

a. clearly defined tactical areas.
b. centralized control and coordination.
c. total commitment.
d. short reaction time.

45. What characteristic of antimechanized operations tells you not to indiscriminately attach supporting antimechanized means to assault elements?

a. Increased organizational flexibility
b. Key terrain
c. Control and coordination
d. Rapid massing

46. During the early stages of an amphibious operation, an antimechanized amphibious consideration is that there is an absence of _____ to use against armor.

a. fire power
b. air support
c. personnel
d. artificial barriers

47. In the amphibious assault, the force initially has no land area to defend; therefore the assault is _____ in nature.

a. defensive
b. action and reaction
c. offensive
d. helter skelter

A. Matching. For items 48-51, match each consideration in Column 1 with its appropriate comment in Column 2.

Column 1 Consideration		Column 2 Comment
48. _____	Separation during a nuclear threat	a. Units that are isolated from major elements.
49. _____	Vulnerability of helicopterborne troops	b. Not having full antimechanized means.
50. _____	Lack of reconnaissance	c. Hampered by unfamiliar landing area.
51. _____	Absence of means	d. Often dictates wide separation of units.

52. The destruction of an armored force starting at the greatest possible distance with a corresponding increase in the density of fires as armor closes is a definition of the _____ concept.

a. HAW, MAW, LAW
b. combined arms
c. defensive operations
d. landing force

53. Which is the only heavy antiarmor weapon?

a. Law
b. Dragon
c. Tank
d. Tow

54. All supporting arms weapons and weapons systems are considered _____ antiarmor weapons.

a. light
b. medium
c. heavy

55. Which is not a light antiarmor weapon?

a. mines
b. demolitions
c. Dragon
d. rocket launcher

56. Passive antimechanized means include

a. air, artillery, and naval gunfire support.
b. the HAW, MAW, LAW concept.
c. concentric, ever-increasing volume and massed fires.
d. obstacles, smoke, illumination, and electronics.

57. The general concepts of antimechanized fire are

a. HAW, LAW, and MAW and surprise.
b. concentric and ever-increasing volume and massed fires.
c. artillery and naval gunfire support.
d. active and passive fires.

58. What is the condition of antimechanized readiness when the threat armored force is detected but is not imminent?

a. I
b. II
c. III
d. IV

59. The elements of the tank alert message include

a. "Tanks clear"
Condition
Call signs
Size of threat
Location of threat
Anticipated time

b. "Tank alert"
Range and deflection
Call signs
Location
Time of day

c. "Tank alert"
Condition
Call signs
Size of threat
Location of threat
Anticipated time

60. The elements of the tank clear message include

a. "Tanks alert"
Call sign
Location
Size of threat

b. "Tanks clear"
Size of threat
Time
Authentication

c. "Tanks clear"
Communications precedence is imminent
Time
Location

d. "Tanks clear"
Communications precedence is imminent
Time
Authentication when required

61. Which of the following rifles is the standard rifle for a Marine Rifle Company?

a. M16
b. AK74
c. FN-FAL
d. M14

62. Which of the following mortars is located in the Marine rifle company?

a. M224 (60-mm)
b. M29 (81-mm)
c. M1937 (82-mm)
d. M1943 (120-mm)

63. The M29A1 (81-mm) mortar provides what type of support to the infantry battalion?

a. NBC
b. Logistical
c. Indirect fire
d. Direct fire

64. The command to line of sight guided missile used by the infantry battalion to destroy hard targets is the

a. M190 LAW.
b. M220 TOW.
c. M200 JAWA.
d. M47 DRAGON.

65. Which of the following is <u>not</u> a mission for the M60 machine gun?

a. Antipersonnel
c. Antimateriel
c. Antivehicular
d. Antiair

66. The 66-mm heat rocket provides what support to the infantry battalion?

a. Indirect fire
b. Direct fire
c. Screening
d. Signaling

67. The M202 rocket launcher is capable of destroying all of the following targets except

a. vehicles.
b. materiel.
c. bunkers.
d. tanks.

68. The M203 grenade launcher <u>cannot</u> provide which of the following to the infantry squad?

a. casualty production
b. signaling
c. white phosphorous
d. shotgun

69. The mission to land the surface assault elements of the landing force and conduct armored mechanized operations ashore is the responsibility of the

a. tank battalion.
b. aviation elements.
c. engineers.
d. assault amphibian battalion.

70. The mission of providing indirect fire support for the amphibious assault and subsequent operations ashore is the responsibility of the

a. assault amphibian battalion.
b. artillery element.
c. reconnaissance.
d. engineers.

71. Who has the responsibility to participate as the air component during the amphibious assault and subsequent operations ashore?

a. Aviation
B. Engineer
c. USAF
d. USN

72. Who has the responsibility to conduct ground surveillance in support of the amphibious assault or subsequent operations ashore?

a. Aviation
b. Engineers
c. Reconnaissance
d. Artillery

73. Who has the responsibility to provide firepower and shock effect to the unit conducting the amphibious assault and subsequent operations ashore?

a. Tank battalion
b. Engineer battalion
c. Reconnaissance battalion
d. Assault amphibian battalion

74. What are the threat forces able to do throughout the battle area?

a. Defend any terrain
b. Mass large tank forces
c. Use chemical weapons
d. Operate without resupply

75. To achieve surprise and range, antiarmor ambushes can emplace and extract by

a. AAV's.
b. jeeps.
c. helicopters.
d. motorcycles.

76. Three types of antiarmor offensive tactics used by the small unit are

a. HAW, MAW, and LAW.
b. ambush, raid, and forces left in contact.
c. secure objective, take prisoners, and seize equipment.
d. frontal, flank, and envelopment.

77. What small unit antiarmor tactic is used to solely destroy threat armor?

a. Ambush
b. Raid
c. Flanking
d. Forces left in contact

78. The three elements of an armor killer team are the command and control element, the support and security element, and the _____ element.

a. passive means
b. active means
c. tactical
d. armor destroyer

79. When a fireteam is used as the support and security element, two men carry M-16 automatic rifles, the other two are armed with

a. M203's
b. M1911A1's
c. Dragons
d. M-72's

80. How many Dragon gunners are in the armor destroyer element?

a. 0
b. 1
c. 2
d. 3

81. The five steps used by an armor killer team to defeat armor are

a. mines, ditches, obstacles, artillery, and mortars.
b. separate, channel, blind, stop, and destroy.
c. air, naval gunfire, mortars, rifles, and artillery.
d. expedients, obstacles, smoke, air, and Dragons.

82. Natural terrain and manmade obstacles are used to _____ armor.

a. blind
b. kill
c. stop
d. channel

83. What are the three defensive techniques used by small units to defeat armor?

a. Fighting holes, concealment, and obstacles
b. Maneuver, fire and maneuver, and envelopment
c. Air cover, artillery, and naval gunfire
d. Channel, blind, and separate

84. You can use all the protection available and still be hit if

a. you let the enemy get too close.
b. you don't keep firing.
c. the enemy can see you.
d. the enemy can hear you.

85. Obstacles should be constructed in depth and covered by

a. trees.
b. fire.
c. boulders.
d. sand.

86. Most tracked vehicles cannot climb a grade of _____ degrees

a. 20
b. 30
c. 50
d. 60

87. The six general principles for positioning of direct fire antiarmor weapons are using cover and concealment, avoiding conspicuous terrain features, integrating with infantry,

a. mutual support, flank positions, and good fields of fire.
b. frontal positions, independent fires, and good fields of fire.
c. short ranges, flank positions, and interlocking fires.
d. rear positions, maximum range, and ground observation.

88. You position antimechanized weapons to provide fields of fire to

a. minimum range.
b. 80% of maximum range
c. maximum range.
d. the flanks and rear.

89. The four types of positions are

a. primary, alternate, supplementary, and hide.
b. passive, active, decoy, and registration.
c. acquisition, reference, deflection, and decoy.
d. fighting hole, cat hole, trench, and cove.

90. Positions that allow for coverage of different sectors of fire such as the flank or rear are called _____ positions.

a. primary
b. alternate
c. supplementary
d. passive

91. When an antimechanized weapon position has no natural concealment it should use the _____ position.

a. open
b. closed
c. hide
d. active

92. The following are steps used in occupying a position (using a TOW position as an example).

Approach the position from the rear
Stop short of the actual position
Routes should preclude observation
Weapons are guided by arm and hand signals
Eliminate all signs of occupation

What step should be added?

a. Dry foliage used for camouflage
b. Only one route should be used
c. Employ weapons in the open
d. Leaders should reconnoiter

93. The principle for priority of engagement is to shoot the _____ target first.

a. closest
b. farthest
c. middle
d. most dangerous

94. How far will a Dragon missile travel in 8 seconds?

a. 800 feet
b. 800 yards
c. 800 meters
d. 800 miles

95. The essential elements in a successful target engagement are

a. fire control, separation, formation, and possibility.
b. reference points, tracking, boundaries, and assignment.
c. acquisition, identification, designation, and determination.

Review Lesson Solutions

Question		Reference
1.	a	1-1
2.	b	1-2
3.	c	1-3
4.	a	1-3
5.	c	1-3
6.	b	1-3
7.	c	1-4
8.	a	1-4
9.	c	1-4
10.	c	1-4
11.	a	1-4
12.	b	1-5
13	b	1-5
14.	b	1-5
15.	c	1-5
16	a	1-5
17	b	1-6
18.	c	1-6
19.	d	1-6
20.	c	1-6
21.	b	1-7
22.	a	2-1
23.	c	2-1
24.	d	2-1
25.	c	2-1
26.	c	2-1
27.	a	2-1
28.	d	2-1
29	d	2-1
30	a	2-1
31	c	2-1
32	c	2-1
33	c	2-1
34	a	2-1
35.	c	2-1
36.	d	2-1
37.	a	2-1
38.	c	2-1
39.	d	2-1
40.	b	2-1
41.	b	3-1

Review Lesson Solutions (cont)

Question		Reference
42.	c	3-1
43.	b	3-1
44.	d	3-1
45.	a	3-1
46.	d	3-2
47.	c	3-2
48.	d	3-2
49.	a	3-2
50.	c	3-2
51.	b	3-2
52.	a	3-3
53.	d	3-3
54.	c	3-3
55.	c	3-3
56.	d	3-3
57.	b	3-3
58.	d	3-4
59.	c	3-4
60.	d	3-4
61.	a	3-5
62.	a	3-5
63.	c	3-5
64.	d	3-5
65.	d	3-5
66.	b	3-5
67.	x	3-5
68.	x	3-5
69.	d	3-6
70.	b	3-6
71.	a	3-6
72.	c	3-6
73.	a	3-6
74.	b	4-1
75.	c	4-2
76.	b	4-2
77.	b	4-2
78.	d	4-3
79.	a	4-3
80.	c	4-3
81.	b	4-4
82	d	4-4

Review Lesson Solutions (cont)

Question		Reference
83.	a	4-5
84.	c	4-5
85.	b	4-5
86.	d	4-5
87.	a	4-6
88.	c	4-6
89.	a	4-6
90.	c	4-6
91.	c	4-6
92.	d	4-6
93.	d	4-7
94.	c	4-7
95.	c	4-7A

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