

A NOTE FROM SPECTRUM HOLOBYTE

TANK is a realistic military simulation of modern land combat. The program is based on a real military simulation network system used by the United States Army for training at Fort Knox. The system is called SIMNET. SIMNET integrates tanks, close air support jets, Apache helicopters, and artillery together on an electronic battlefield. **TANK** is an accurate recreation of this system. To this technical replication of the military equipment, it adds the individual tactical initiative demanded of the American soldier and the centralized control affecting Soviet tactics.

To portray the excitement of armored combat, we have chosen to recreate the "wargames" being played at today's Army War College by pitting the world's two top armies against each other. In World War II, the American and the Soviet armies overcame terrible odds and demonstrated unprecedented dedication and bravery. This tradition of excellence continues in both armies to the present day.

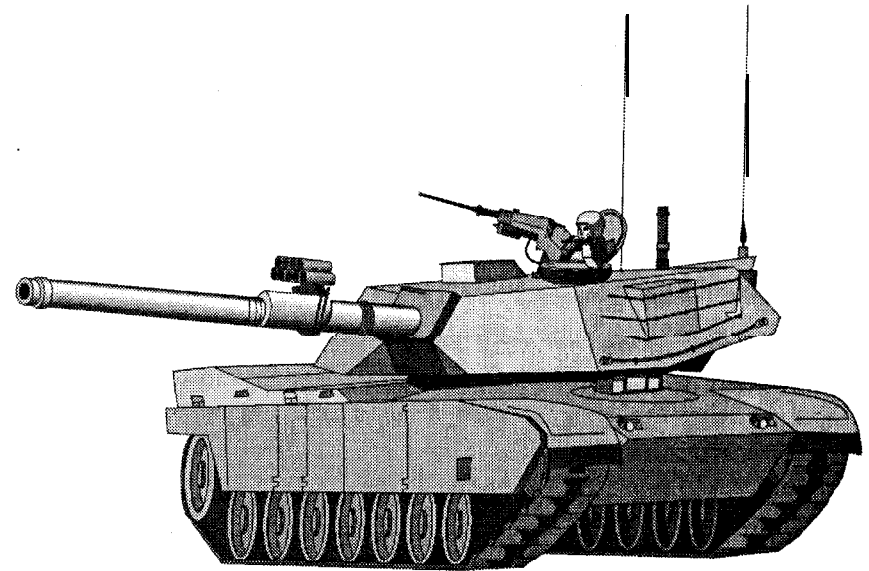
At Spectrum HoloByte we hope that the trend in the Soviet Union towards *glasnost* and perestroika continues. After working with Soviet citizens on **Tetris** and **Welltris**, two great computer games, we have come to appreciate the talents, creativity, and pride of the Russian people. While **TANK** simulates a military confrontation between the Soviet Union and the United States, we hope that this battle will take place only on the computer battlefield.

We hope that by experiencing **TANK**, you will appreciate the difficulties and dangers of battle. This game has been designed to present the player with some of the cold hard realities of war. People die in battle; families lose their loved ones; nations lose a generation. At Spectrum HoloByte we hope that there will be a day when the only wars in the world will be fought on computers.

This game is dedicated to the children of both the United States and the Soviet Union. May they live in a world of trust and peace and work together to build a better world for all mankind.

Gilman G. Louie
Spectrum HoloByte

TANK™



The M1 Abrams Tank Simulation
Spectrum HoloByte™



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 valuable inputs.

Some artwork inspired by Modern **Land Combat**.

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INSTALLING YOUR TANK GAME

Hardware Requirements

An IBM AT or compatible or an IBM PS/2 Model 30-286 or above or an IBM PC or compatible with 80286 or 80386-based accelerator card
640K RAM
A 1.2MB 5.25" disk drive or a 720K 3.5" disk drive
EGA (Enhanced Graphics Adapter)
 Also VGA compatible in EGA mode
An EGA monitor or multi-scan monitor
A joystick is optional

Setup and Loading Information

We assume that you are familiar with basic terms and operations of your computer including DOS commands such as formatting and copying disks. If you're using a joystick, we assume you know how it works. If this is the first program you have run on your computer, please refer to the owner's manual and DOS manual to become familiar with its operation.

The Disks in this Package

There is one 1.2MB 5.25" disk and two 720K 3.5" disks in the **TANK** package. If you need the game on 360K 5.25" disks for installation on your hard disk, you can either transfer the files yourself or else follow the instructions on the Disk Exchange Coupon. **TANK** will not run from 360K floppy disk drives.

Making a Backup Copy of your TANK Disk

You should immediately make a backup copy of the **TANK** disks and use the backup copy for everyday play. Follow the normal conventions for copying disks, but make sure your original disk is write-protected before you make the backup, so you don't accidentally erase the **TANK** disk. (Put a write-protect tab over the notch of the 5.25" disk to prevent accidental erasures. Write-protect the 3.5" disks by sliding the tab so the window is open.) Use the



LOADING TANK

backup copy when playing the game and make sure it is not write-protected since data is written to the disk during play.

Loading TANK onto a hard drive

To run **TANK** from a hard drive, create a directory called "**TANK**" and copy all the files from the **TANK** program disk(s) to that directory.

Loading the program

Turn on your computer and proceed to a DOS prompt. If you're loading **TANK** from a **hard drive**, enter:

```
cd TANK or cd \TANK
```

depending on the directory you established for the game.

If you're running from a **floppy drive**, insert your **TANK** backup in the drive. Then change to that drive (e.g. type **A:**) if you haven't already done so.

If you're running **TANK** from the floppy drive, leave the dish in the **drive** while playing because information may need to be accessed from or written to the disk.

At the DOS prompt, type:

```
TANK or tank (press [Enter])
```

A title screen appears after the program is loaded and it's time to play **TANK**.



USING THIS BOOK

USING THIS BOOK

This battle manual is divided into 5 sections.

PART I shows you how to get into the game and select the mission you wish to accomplish.

PART II demonstrates how to play the game from every approach, both strategic/operational (pg. 17) and tactical (pg. 32). It describes how to win the game (pg. 57) and displays the victory screens that appear when you finish the game (pg. 58).

PART III (pg. 59) describes the missions, both the training missions at Fort Knox and the battle missions in Western Europe and the Middle East.

PART IV (pg. 94) is a chapter of helpful hints and troubleshooting suggestions.

PART V (pg. 103) is the appendices, which have historical notes on the development of tank warfare, a glossary of terms used in the game and in military parlance, technical specifications for friendly and hostile vehicles, a general keyboard layout for the game and a bibliography.

INTRODUCTION

WHAT THIS GAME IS ABOUT



WHAT THIS GAME IS ABOUT

TANK is a game of armored warfare in the very near future. There are three levels of game play: the operational level of the battalion or company commander, the tactical level of the platoon commander and the action-oriented, *individual combat level* of the individual tank commander or crewman.

You can play all three levels in one game; you can plan the strategy of your battalion/company, formulate the tactics of each individual platoon and finally fight each of the tanks in a battle against the enemy of the mission.

However, you do not have to fight any level of this game you don't want to. If you just want to plan the strategy and see how effective it is, you can maneuver icons representing your platoons to the selected position, give them their movement orders and let the computer play the game until another strategic or tactical decision needs to be made.

Or you can establish a tactics plan for your platoon of tanks and let the tanks fight out the battle without ever getting into an individual tank.

However, if you get into the tank, and take the position of tank commander, gunner or driver, you enter a real-time, realistic simulation of tank warfare that puts you on the front line, ready to fight your tank through the greatest challenge you will ever face — the high-tech battlefield of modern armored warfare.

The Game of Modern Armored Warfare

STARTING OUT

When you first boot up the game (see pg. 2 for instructions) you will see a title screen. Hit any key to skip the animation and continue to the **Mission Selection Screen**, your first step towards playing **TANK**.



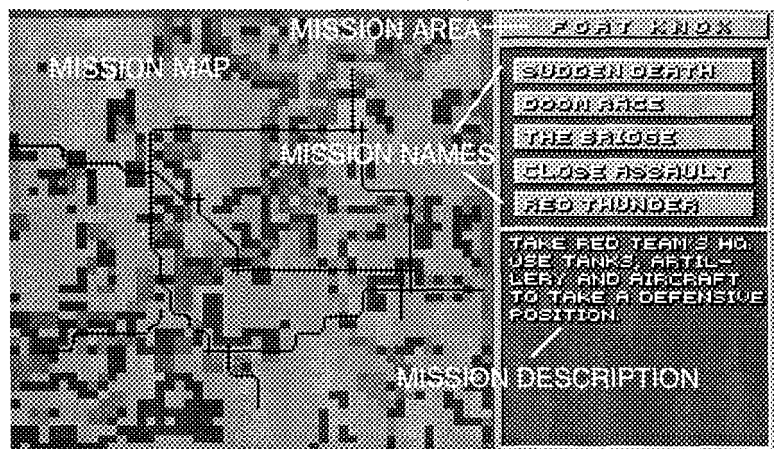
MISSION SELECTION

MISSION SELECTION SCREEN

This screen allows you to select your mission for this game. You can select missions from three different areas: Fort Knox (training missions), Germany (European missions) or Israel/Lebanon (Middle East missions).

The screen initially gives you a map of the Fort Knox area and a list of the possible Fort Knox missions. Move the highlight to the Fort Knox title at the top of the menu with the up and down arrow keys and hit **[Enter]** to bring up the map of the Central Europe area and the mission list for that area. To get to the Middle East missions, highlight and choose the Central Europe Title, and so forth. As you highlight a mission, a capsule description of the mission appears at the bottom of the screen. Hit **[Enter]** to pick the mission you have highlighted. The missions are described further in Chapter III — Missions.

The missions are sequential. If you wish to play an entire campaign (or training regimen), play the missions in the order listed. Your score in the game is strictly mission specific; there is no overall campaign score.



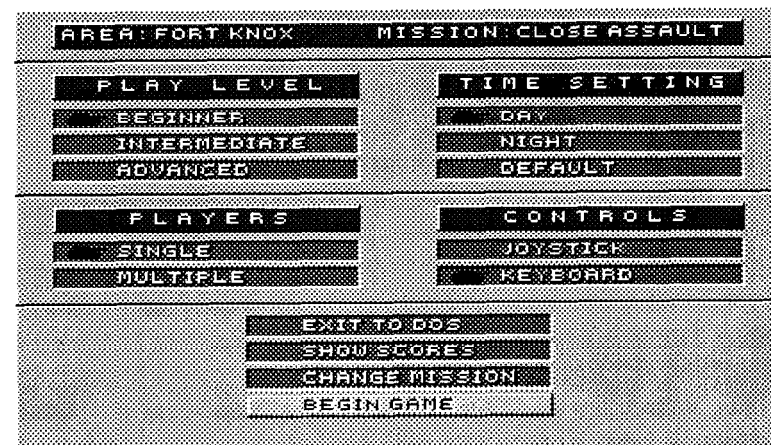
GAME CONFIGURATION SCREEN



GAME CONFIGURATION

Once you have selected your mission, you proceed to the Game Configuration Screen.

The Game Configuration Screen establishes the parameters



of the game you will be playing. Tank icons initially designate the default option for each menu and move to your selected option.

The top of the screen display tells you what area you are playing in and what the mission is. Beneath that are five Menus. Use the arrow keys to highlight the menu and selection you wish.

Play Level Menu





GAME DIFFICULTY LEVELS

TANK can be played at one of three levels of difficulty, depending on the expertise of the player. The higher level of difficulty used, the higher the potential score for the player.

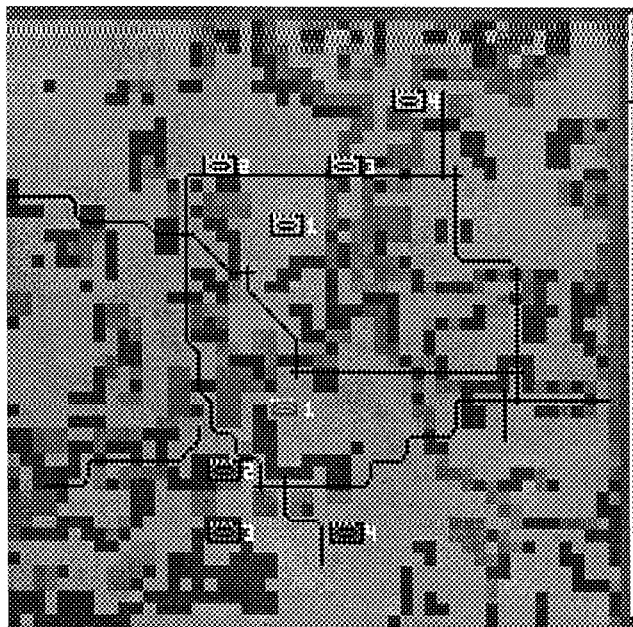
BEGINNER

This level is for the beginner to the game.

A Beginner game is like a tactical exercise fought to give the player some idea of what the equipment can do without the complications of the real world. The Beginner player has two advantages:

Perfect Info: All enemy equipment and movement is displayed on whatever screen you are looking at. You know at all times the enemy's location and what they seem to be doing. There is no need to use the Recon function (page 26) of the HQ menu, and the Drone Screen (page 39) shows everything possible every time you use it.

Daytime Conditions: The battle conditions are assumed to be clear daylight, with perfect viewing conditions.



GAME DIFFICULTY LEVELS

INTERMEDIATE

The more experienced commander can fight an intermediate battle.

There are some differences in what the commanders know which adds to the complexity and realism of the conflict.

An intermediate game is like a peacetime wargame fought to try to simulate the problems of fighting a battle in a real world situation. However, some complexities cannot be duplicated outside of actual combat.

Close to Perfect Info: Now you must use the Recon function of the HQ menu (pg. 26) to determine the placement of the enemy, and you can use the Drone Screen (pg. 39) to search the battlefield as if you were using a reconnaissance drone. However, the Drone Screen may not show everything it passes over, as it takes into account enemy attempts at camouflage.

Reduced Visibility Conditions: The time of day becomes a factor. Recon and Air Support missions have trouble with nighttime conditions.

ADVANCED

The experienced commander can fight the Advanced game, which

duplicates most of the hazards of combat.

Less Than Perfect info If Recon Plane is Used: Now, use of the Recon function will probably give partly erroneous or incomplete information, simulating the problems of human error in warfare. The Drone Screen cannot be used.

More Skilled Enemies: Adding to the difficulty is the increased shooting and movement ability of the enemy troops and their improved war plans, replicating the intricacies of standard Soviet strategy as much as possible.



TIME SETTING

The Icons

The icons you see on the mission map screens are based on the traditional military iconography for displaying units in a two-dimensional setting.



Armored Unit (tanks)



Armored Cavalry (IFVs)



Engineers/Trucks



Towed Artillery

Aircraft, on the other hand, are shown as overhead silhouettes.

Time Setting Menu



This allows you to decide the basic visibility conditions you are working under. Specify whether you are starting out in **day** time (considered to be about 7:00 AM), **night** time (considered to be about 10:00 PM) or the **default** time, which is preset in the game.

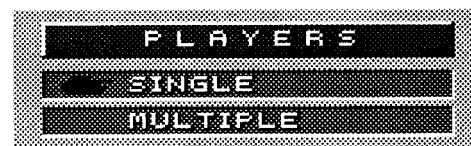
During the day, you have greater visibility (as does the enemy) and your reconnaissance missions are more likely to be successful (as are his). Night gives you more concealment but more confusion.

You choose.



SINGLE OR MULTIPLE PLAYERS

Players Screen



Sing/e: This is the default selection for this menu. It recognizes the usual situation, one player against the computer.

Multiple: If you want to play with more than one player, using more than one computer with cable or modem hook-ups, select this option. This activates the:

Multiple Players Screen

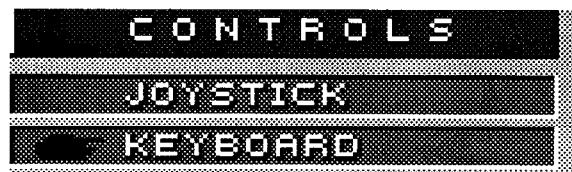
If you want to play against another player, this option allows you to fight the other player directly, with one taking the M1 or larger NATO force and the other taking a Russian force or individual T-80. Use this screen to set up the game for a player on each side of the mission. See the Addendum for instructions on how to use this screen.

Note that if you are playing another player in an individual tank game, you are both essentially using M1s, no matter what mission you choose. The interior screens each of you sees are those for the M1 tank, even though the exterior views of one of the tanks are those of a Russian T-80.



CONTROLS MENU

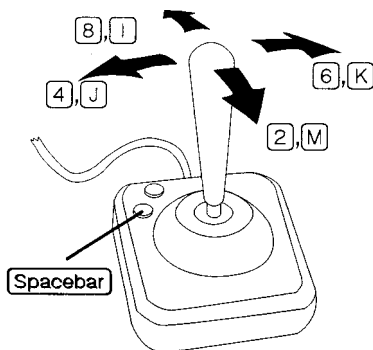
Controls Menu



This chooses your movement and aiming interface with the computer. Whether you pick the joystick or keyboard, you still have complete keyboard use.

Using a Joystick

The joystick can be used in place of most of the functions of the number pad in most of the screens, particularly the functions of the arrow keys and [Spacebar]. Thus, it can be used to turn the tank and turn and aim the tank gun. The joystick button can be used to fire the main gun. Other functions (see next chapter) are still controlled by the keyboard.



If You Do Not Have a Number Pad

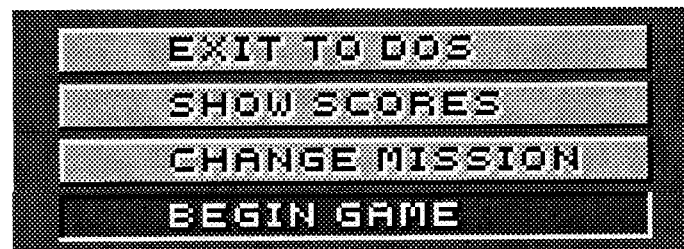
If your keyboard does not have a number pad, you can use certain letters, arranged in a similar configuration, instead.

I = 8 or ↑	U	I	O	7 Home	8 ↑	9 PgUp	O = 9
U = 7	J	K	L	4 ←	5	6 →	K = 5
J = 4 or ←	N	M	<	1 End	2 ↓	3 PgDn	L = 6 or →
N = 1							M = 2 or ↓
							, = 3



START GAME MENU

Start Game Menu



EXIT TO DOS

This takes you out of the game and back to DOS. From this point, you must start the game over if you wish to continue playing.

SHOW SCORES

This takes you to the Top Score Screen to see the current five best scores for this mission.

CHANGE MISSION

Choosing this option takes you back to the Mission Area Selection Screen to choose a new mission, as previously described.

Check the defaults described above. If they are satisfac-

BEGIN GAME

tory, choose this option (the default as you come into the screen) and immediately begin play. Otherwise, you must choose the options you wish and then use this command to start the game. This takes **you** to the **Armament Screen**.

Once you have started the game, go to Chapter II – How To Play.



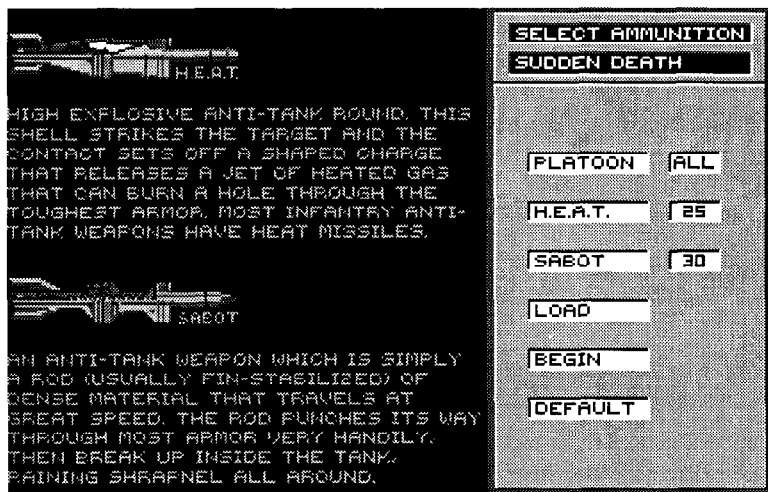
ARMAMENT SCREEN

ARMAMENT SCREEN

Once you pick your mission, the computer shows you the Armament Screen. This gives you the choice of the main anti-tank armament for the tanks available to you.

PLATOON lets you equip all platoons the same, or equip each uniquely. Strike ☐ or ☐ (or ☐ or ☐) to switch the choice between **ALL** or each platoon by number.

Russian T-80s and many upgraded T-72s are well protected against **HEAT** rounds. If you will be facing mostly other tanks, take mostly **Sabot** rounds.



Use ☐ or ☐ to go up and down the menu. The numbers given are a default mix of HEAT and Sabot. You can accept this mixture by moving the highlight to **Default** and pressing ☐ to go out of this screen and accept the default shells for all tanks, no matter what choices you have made before using **Default**.

To change the ammo mix, move the highlight to either HEAT or Sabot and use the ☐ and ☐ (or ☐ or ☐) to increase or decrease the number. The other number will compensate to keep the total equal to the total possible shells. When you have a mix you like, move the highlight to **Load** and strike ☐ to set the mix, then move to **Begin** and hit ☐ to proceed to the game.

II. HOW TO PLAY



LEVELS OF PLAY

HOW TO PLAY

TANK can be played on one of three levels: the Battalion Operations Level, the Platoon Tactical Level and the Individual Tank level. The player can be the Battalion commander sending his platoons out to engage the enemy, the platoon leader taking his four tanks out to fulfill the dictates of the Battalion colonel, or the Individual tanker trying to perform his tasks and stay alive at the same time.

In any one game, the player can play just one of these roles or all three (actually five, since there are three different positions to play in the individual game).

Once you have begun play by entering **Begin Game** on the Game Configuration Screen, you are ready to play the game on any level. First, we will deal with the Operations Level.

The Colonel

You look over your map. Your battalion has been given the job of defending twenty miles of German countryside. Somewhere out there, according to S-2, a Soviet armored regiment is on its way. You look at the tanks you have available and the map of the region division wants you to defend. You take another gulp of coffee and start to plan . . .



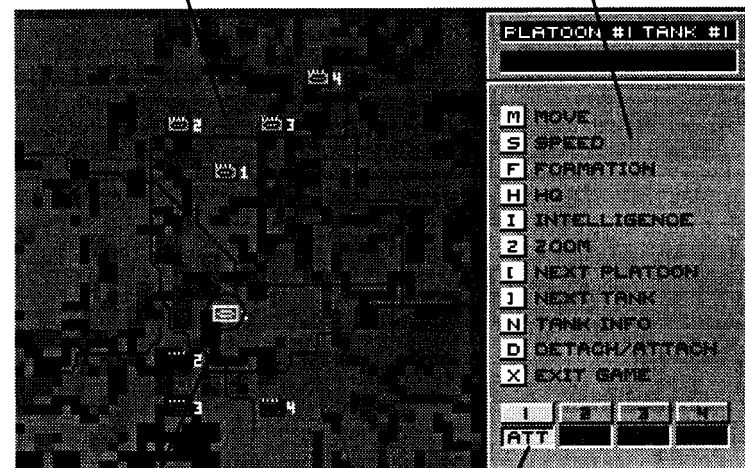
OPERATIONS LEVEL

OPERATIONS LEVEL GAME

Main Menu and Map **[F1]**

OPERATIONAL MAP

MAIN MENU



PLATOON SPECIFIED

TANK SPECIFIED

Map Colors

Black: Road network

Red: Highest ground

Dk. Green: Low ground

Brown: High ground

Lt. Green: Lowest ground

This screen shows the whole battle area, where the enemy tanks are, where your tanks are, where the targets are, etc. It tells you how the battle is going, where you want to move your tank platoons, and where to call for support.

This screen can be called from most other screens by pressing **[F1]**; an entire operational level game can be played on this screen by going only to the subscreens on this menu.

Tank icons on the screen show the location of each platoon. Other icons show aircraft, enemy tank platoons and objectives. One platoon icon is highlighted. The Main Menu gives you keys to strike to determine information about the highlighted icon or move to another platoon.



MAIN MENU EXPLANATION

Main Menu

Striking a button on this menu takes you to another menu that deals with some aspect of the platoon's operations.

MOVE takes you to a menu that deals with the planned path of the platoon. See page 21.

SPEED takes you to a menu that deals with the speed of the platoon. See page 23.

FORMATION takes you to a menu that deals with the tactical formations of the platoon. See page 24.

HQ takes you to a menu that deals with the platoon's interface with battalion and brigade headquarters. See pages 25-27.

INTELLIGENCE takes you to a menu that deals with information about the

mission, including a grid map and estimates of enemy units and friendly units destroyed. See page 28.

ZOOM takes you to a menu that allows the commander to "zoom in" on any area on the map to get a better idea of the terrain, surrounding units, and so forth. See page 29.

NEXT PLATOON allows you to select and direct an icon (representing a platoon of tanks or AA vehicles). One icon is automatically highlighted. To select another icon, push this key and it highlights the next icon in order.

NEXT TANK allows you to choose which tank of the four listed below you wish to see on the Tank Info Screen.

TANK INFO takes you to a screen that gives information about the layout and functions of the tank and credits for the tank game.

DETACH/ATTACH allows you to either detach the tank selected on the Next Tank option from the platoon or attach it to the platoon if it is already detached. A detached tank operates on its own and must be given individual orders, rather than following the orders given the rest of the platoon.

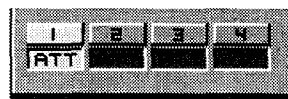


TANK INFO SCREEN



EXIT GAME takes you out of the game. If your current score is the highest for that mission, you will see the Awards Screen with the new score. See pages 57-59.

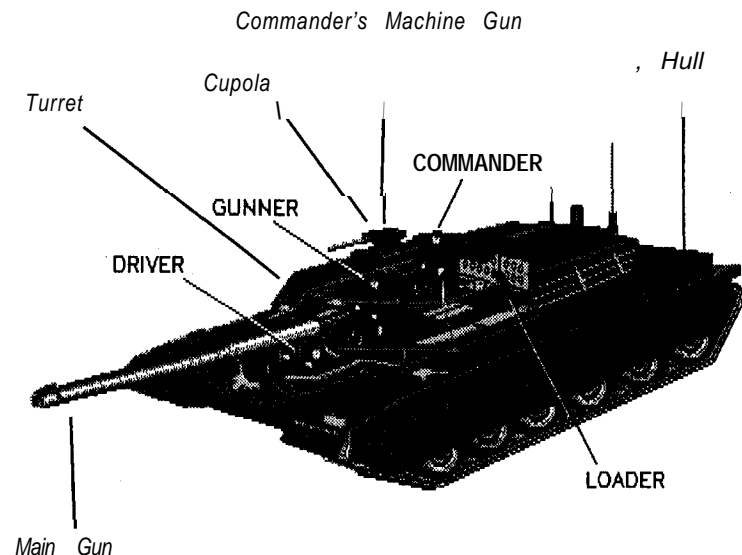
TANK STATUS SELECTOR



This menu allows you to go to another menu to give individual orders to each tank in a platoon. Use [] to toggle between the tanks.

TANK INFO SCREEN

This screen is purely informational, and has no bearing on the play of the game. For information on the current fighting status of the tank, use the Damage Status Display described on page 35.





The Captain

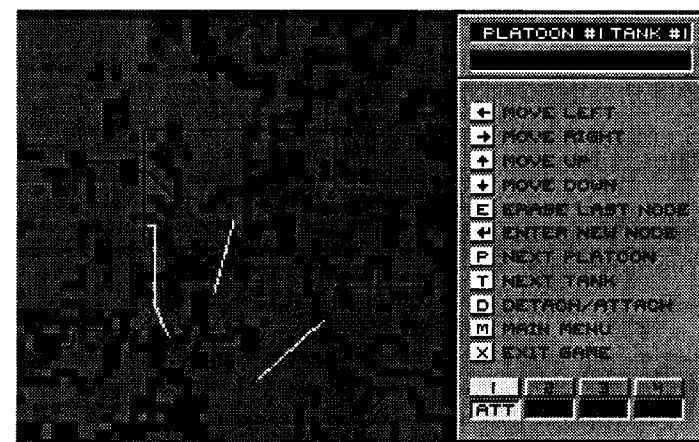
You knew the job was dangerous when you took it. The colonel just passed the ball to you. "Here's where the enemy is coming in; here's where you have to stop him. Good luck."

Thanks, Co/one/.

You have three platoons of M1 Abrams tanks — 12 of the finest fighting vehicles in the world. Somewhere out there is a Russian general with entirely too many T-74s and, worse, T-80s, and Ivan wants the ground you are sitting on. You sigh and start looking over the local area map. Somewhere there has to be a point you can stop the Russians from coming through...



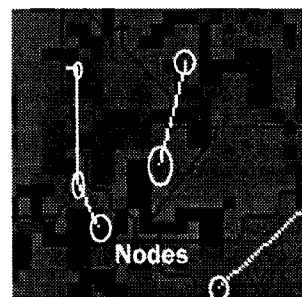
MOVE MENU



Use this menu to plot the paths of your platoons. The screen shows the paths of all your platoons and puts the path editor to work.

The active path is the path of the highlighted platoon.

You create the path by using the **arrow keys** to draw a line from one **node** on the map to the next desired change in the straight-line path of the platoon. At this point hit **[Enter]**; this creates a **node**. A platoon's path can have up to 5 nodes (counting the starting point). If its course must change more than 4 times, give it instructions for those four changes of course and then add to the path



after the platoon has been through some of the nodes.

To change the path of the platoon after it has started, use **[E]** to erase each of the nodes you want to change. This starts with the node farthest away from the current position of the platoon, then successively erases each closer node and path between the nodes. Then use arrow keys and **[Enter]** to establish the new path.



ORDERS MENU

ORDERS MENU

The Orders command (using ☐) takes you to the Orders Menu. This menu lets you give general orders to a platoon after they reach the spot specified through the Move Menu.

Platoon Number\

Current Orders

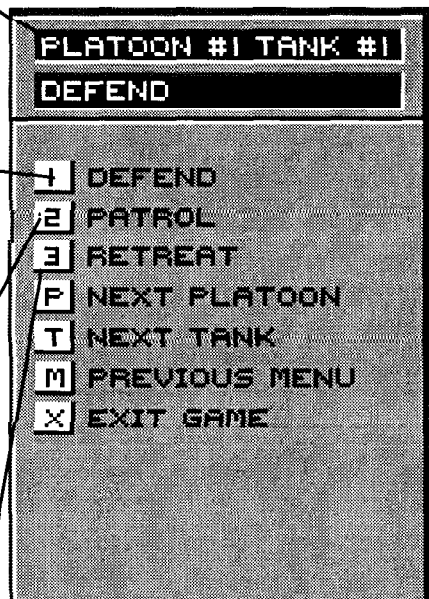
This shows the current order for this platoon.

1 Defend

The platoon goes to the area shown and waits for an enemy to come within striking distance, then attacks.

2 Patrol

The platoon attacks whatever enemy forces it can see in the area it has been sent to.



3 Retreat

The platoon goes as fast as it can to its destination point, ignoring all enemies unless they are directly in its path.

SPEED MENU



SPEED MENU

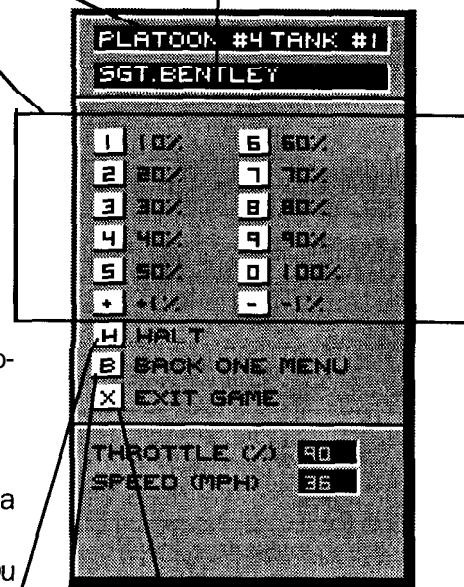
This menu sets the speed of the entire platoon or a single detached tank.

Platoon Number

Name of Commander

Speed Indicators

The main keyboard number keys and and control the speed of the platoon. The percentage of the total possible speed the platoon can go is shown in the Throttle display when the appropriate key is pressed, and the **Speed** display shows the platoon's current speed. Picking a speed sets the speed for the platoon until you change it.



Halt stops the platoon.

Back One Menu returns you to the main menu.

Exit Game takes you out of the game.

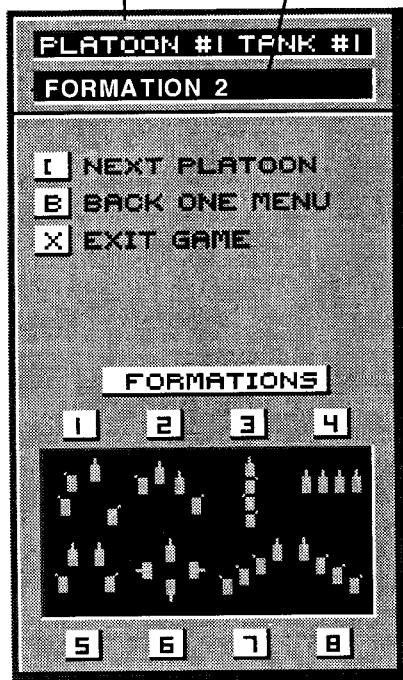


FORMATION

FORMATION MENU

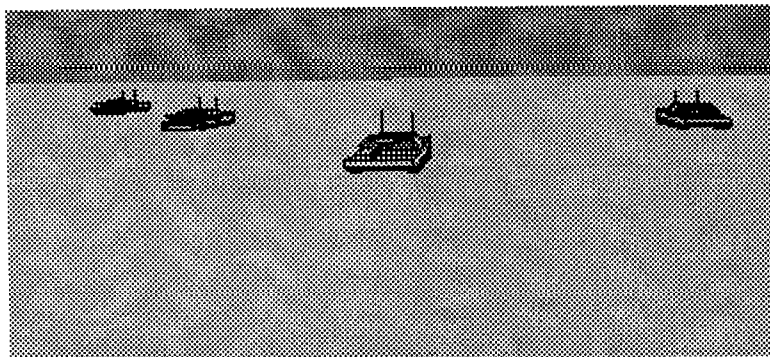
This allows you to set your platoon into a formation suitable for your mission.

Platoon Number Current Formation Number



Use the main keyboard number keys to pick the formation you wish. The platoon will attempt to keep that formation, making allowances only for impassible obstacles as long as you are not personally driving one of the tanks. Once you are driving a tank, you can move it wherever you wish. Once you leave the driver's seat, the tank attempts to regain its place in the formation, unless you have detached the platoon on the Move Screen.

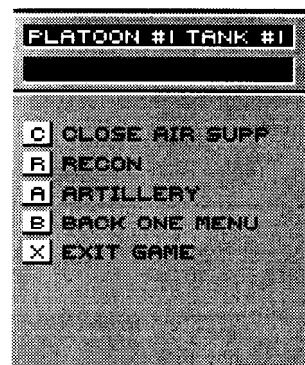
The default formation is Formation #1.



HEADQUARTERS

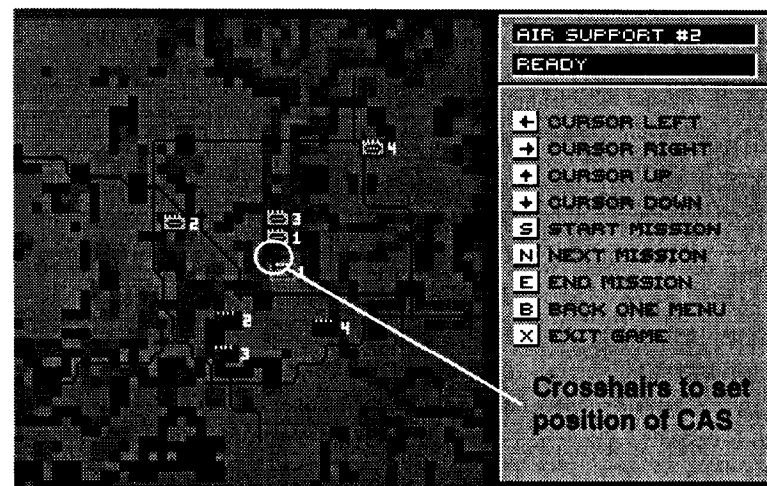
HQ MENU

This Menu provides the possible support missions from Brigade headquarters.



Close Air Supp(ort) is used on air support missions to attack an area you indicate with crosshairs on the map.

The **Close Air Supp** command brings up the screen below. Use , , , to move the crosshairs, then hit when you center the crosshairs on the area you want.



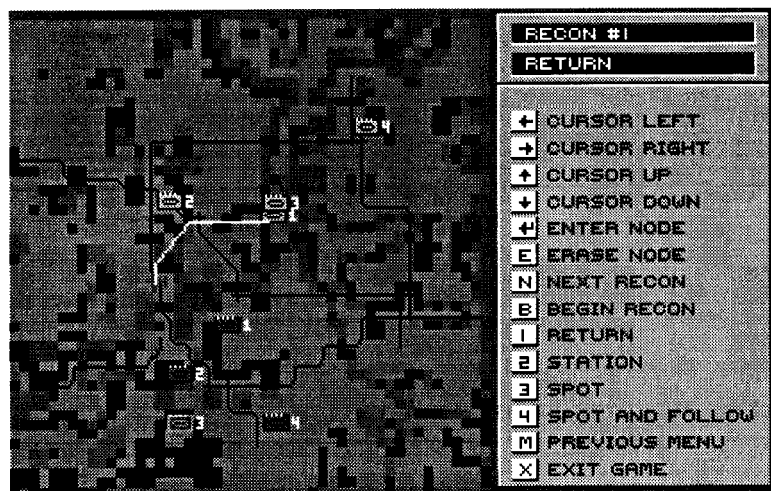
Once you have established the area for Close Air Support (CAS), you can either hit to send your aircraft towards the spot, or wait and come back to the screen later to put in a command.

To get to the next CAS mission available, hit . When you finish giving commands to the last CAS mission, the brings you back to the first mission. A CAS mission can always be altered by coming back to this screen.



RECONNAISSANCE

Recon asks HQ to send reconnaissance aircraft to determine the enemy's precise numbers and locations. Use the same commands used for the Move screen to trace a route for the Recon plane to follow.



The Recon mission shows you what is in an area when the mission takes place. Icons showing the presence of whatever is seen are left in that area until another Recon Mission is flown to update your information about the area.

Use **↑**, **←**, **→**, **↓** to plot the path of the reconnaissance mission, just as you plot a path for a tank platoon. Then use **1**, **2**, **3** to give the missions specific instructions. Strike **S** whenever you want the mission to begin, **N** takes you to the next reconnaissance mission available. To get to a previous mission, strike **N** until the cycle comes around to the one you want.

- 1 Return** means the plane goes to the last point of the path, then returns to its airbase.
- 2 Station** means it goes to the last point of the path, then stays there, showing anything that passes.
- 3 Spot** means that the plane waits until it sees an enemy, then goes back to base.



ARTILLERY

Artillery allows you to pick out a particular area for artillery bombardment. When you need the artillery, specify the area with the arrow keys and then call for the artillery. You always have a limited amount of artillery missions available. The individual mission description, Chapter III, specifies how many you have.

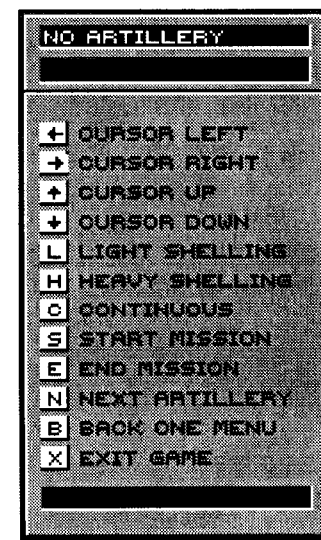
Using artillery on an area tells you nothing about what was in it.

You can call for one of three types of fire mission. Press the given letter to get the mission you want for the situation.

H Heavy Shelling puts all of its shells into the area in a short period of time. This intense bombardment hits its target with a very dense pattern. It is best for attacking a static force, such as another artillery unit or emplaced armor or infantry.

L Light Shelling extends the duration of the shelling. The pattern is less dense but it has a greater chance of catching targets moving through the area.

C Continuous uses all of the missions at once in a Light Shelling pattern. The artillery fires one mission after another at the same target until it has no more shells or you return to the mission and press **End Mission**. This uses up a lot of artillery shells very fast, but is good for softening up a welldefended position.



Artillery Range

The artillery provided with this game has a range of about one quarter the game area. You cannot order artillery to fire beyond that range.



INTELLIGENCE MENU

This command operates somewhat differently from the other Main Menu commands. You are given two choices:

G Grid

With this option you can place a grid over the map. Using the arrow keys you can move a cursor over the grid that will give you the map coordinates of the area under the cursor. This gives you the relationship between points on the map and reference points for using **Drone Screen**, **[F4]**. See pages 39-40.

D Data

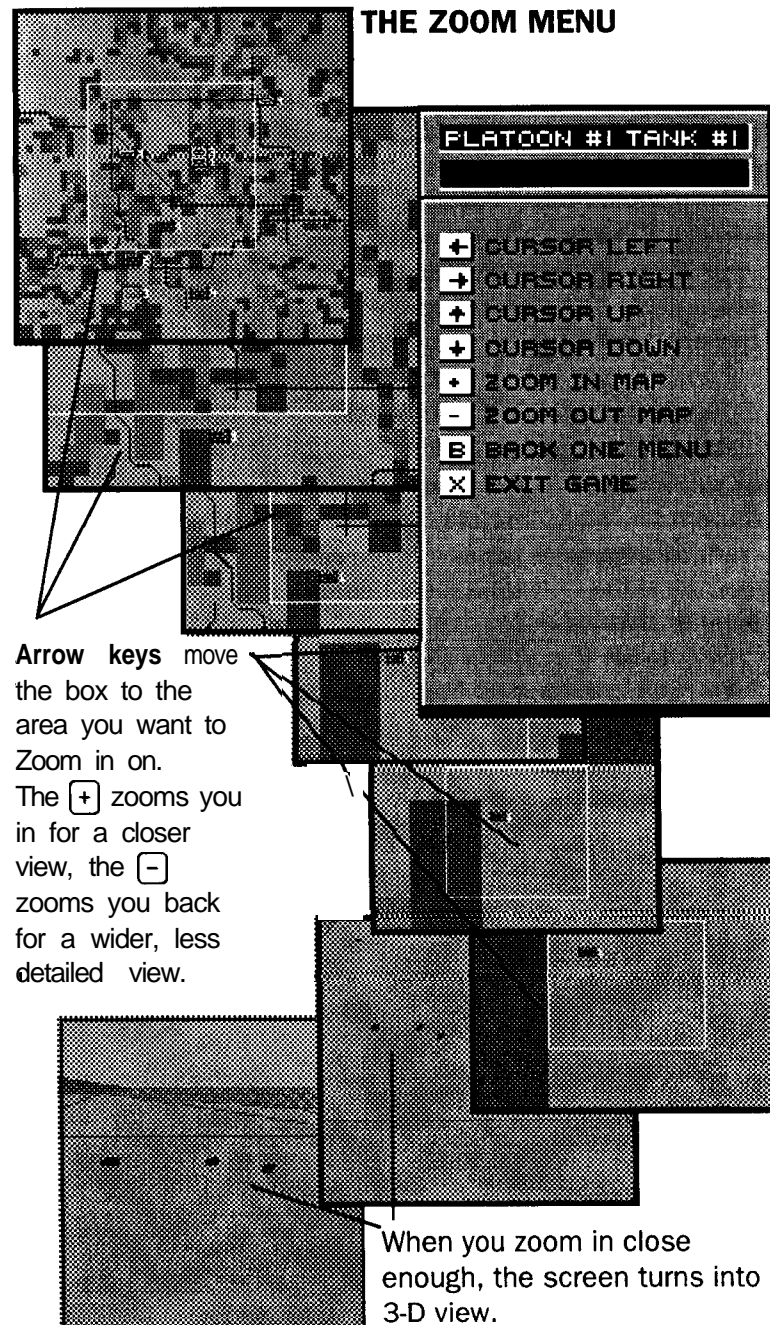
Instead of replacing the menu with another menu, this command replaces the map screen with an intelligence report that has two sections:

Initial Information provides the information originally determined by S-2 (Intelligence) and given to you for the mission. This is virtually the same for every time you play the mission, though S-2's estimate of the exact numbers of enemy forces changes from time to time — simulating the uncertainty of information on the modern battlefield.

Battle Update gives a running estimate of the reported destruction of enemy forces and your own forces. It gives you a quick idea of who is winning, though it may not have much to do with your final FitRep, or score, for the mission; the FitRep may depend on other factors besides the number of vehicles destroyed.



THE ZOOM MENU



**The Lieutenant**

"This section is yours, Joe," the captain said, and you wish you had the option of saying, "That's OK, Fred, you can give it to Emil instead; I don't mind."

But that is not an option. You went to a lot of trouble to have the best platoon in the unit, now you get the benefits of that status that you would just as soon have passed on. Yours is the lead position, the unit the Soviets will hit first. Lucky you.

Looking over your situation map you evaluate the probable direction of the Soviet advance against the possibilities of the terrain. The ground here is hilly, with a lot of steep cliffs. The Soviets' best bet is the very road you are on, and there is a hillside in enfilade on the road. Four MIs ready to pounce on a force coming along that road from the hillside should give the Russians something to think about.

Of course, they might think about it ahead of time. Better put one tank on the Russian-side approach to that hill, just to discourage any scouts swinging wide around the hill..

**PLATOON LEVEL GAME**

If you wish to play on a platoon level, you can leave the guidance of the Battalion to the default computer plan. Highlight one of the platoon icons on the Mission Screen, go to the Zoom Menu and expand the mission map to the area just around the platoon. Use the function keys, as described shortly, to get to a particular station.

Otherwise, you can fight each platoon separately after making the master plan on the Battalion Mission Map.

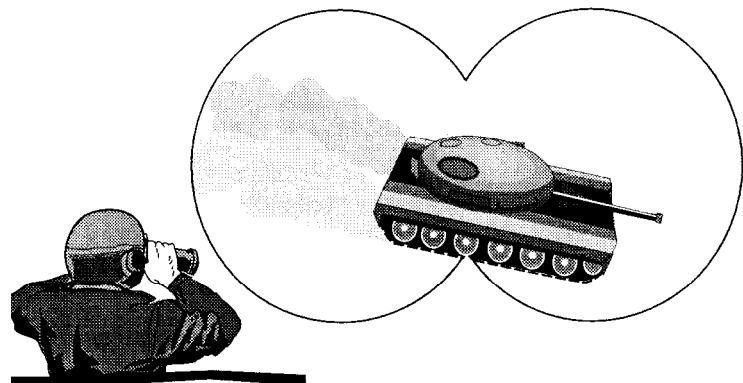
In this mode, you are the platoon leader. Use the Formation Menu to choose your battle formation, and the rest of the platoon follows your lead. You cannot control the movement of individual tanks without going to the Individual Game. See page 32.

To see the whole battlefield, scroll the map with the Zoom Menu or use the Zoom to pull back for an overall view.



INDIVIDUAL GAME

INDIVIDUAL GAME [F2] — [F10]



The Tank Commander

You sweep the horizon again. No helicopters, no planes, no tanks. You begin to wonder if the top brass has screwed up again, and the Russians are thumbing their noses in your general direction as they sweep around your little defense. You look again at the tanks flanking you, hullo down on the reverse side of the hill with their guns on the road, just like yours. You check out the road once again, and realize there is something moving on the horizon. Even as you watch it gets bigger. Is it retreating scouts, or the Russians at last?

Move to the Individual Game by hitting the appropriate Function Key given below. You play all the important assignments in the tank. You can be the Tank Commander, the Gunner or the Driver. Either follow the commands you have given on the Operational and Platoon Level Mission Maps, or follow the pre-programmed plans if you want to concentrate on tank-to-tank combat.



IMPORTANT KEYS

Except in the first mission at Fort Knox (see pages 64-65) you start with at least a platoon of four tanks. You operate the lead tank; the rest of the tanks follow you. You can move to another tank at any time, if any are still intact.

Switching Tanks and Platoons

You can go from one tank to another within a platoon by using [J] and go from platoon to platoon by using [L].

Keyboard Use

The same keys can give different results, depending on the screen. Even keys with only one use may work on one screen, but not on another. However, the Function Keys get you from one screen to another, and they work the same on every screen.

Function Keys	
[F1]	Return to Operational Screen (pg. 17)
[F2]	The Outside Screen (pg. 36-37)
[F3]	Trailer Screen (pg. 38)
[F4]	The Drone Screen (pg. 39-40)
[F5]	The Gunner's View (pg. 41-45)
[F6]	The Driver's Screen (pg. 46-51)
[F7]	The Commander's Machine Gun View (pg. 52-53)
[F8]	The Commander's Cupola View Screen (pg. 54-55)
[F9]	Turret Topside View (pg. 56)
[F10]	Pause Key

Adjusting Sound

Turn all the sound effects on and off with [Alt][S], turn just the engine sound off with [Alt][E].



EXITING THE GAME/MAP COLORS

Exiting The Game

To exit the game at any time, hit **[Esc]** or **[X]**. This suspends the game and brings up a menu with the following choices:

RESUME GAME lets you start where you were when you hit **[Esc]** or **[X]** if you did not mean to end the game, or left the game for a few minutes and want to start again.

END GAME ends the game, calculates your score so far and compares it against previous best scores. See pages 57-58.

EXIT TO DOS lets you leave the game immediately, and does not record a score.

A **TANK** game cannot be saved. You must either complete the game or choose one of these alternatives.

Reading The Colors

In the individual game, you are playing on as accurate a representation of real terrain as we can put on a computer screen. However, some color conventions were used to show difficulty of terrain and distance from the viewer. These colors apply to every use of any screen in the individual game.

Light Green	Flat terrain, best for rapid movement.
Green	Relatively flat terrain or a slight slope -good for a hull down position (see pg. 97)
Light Brown	A much steeper slope.
Red Brown	A barely accessible slope. Use low gear when going up or down for maximum speed and control.
Blue-Green checked	Flat terrain over 5km away.
Purple landscape	Sloped terrain over 5km away.



DAMAGE STATUS DISPLAY

The Status Screen

At any time while playing the individual game, you can use **[Alt][D]** to get to the Tank Status Screen. This screen gives you a quick look at the condition of your tank and the amount of materiel (ammunition, fuel, etc.) you have left.

Damage Status Display

DAMAGE STATUS		INVENTORY	
<input type="checkbox"/> GPS		HEAT	30
<input type="checkbox"/> TRACK		SABOT	24
<input type="checkbox"/> THERMAL EQUIPMENT		SMOKE GRENADES	33
<input type="checkbox"/> TURRET MOTOR		COAX	99
<input type="checkbox"/> COAX		BULLET	800
<input type="checkbox"/> ENGINE		FUEL	648
<input type="checkbox"/> LASER RANGE FINDER			
<input type="checkbox"/> SMOKE GENERATOR			

If the light is on by the item, that item has been damaged and is no longer available.

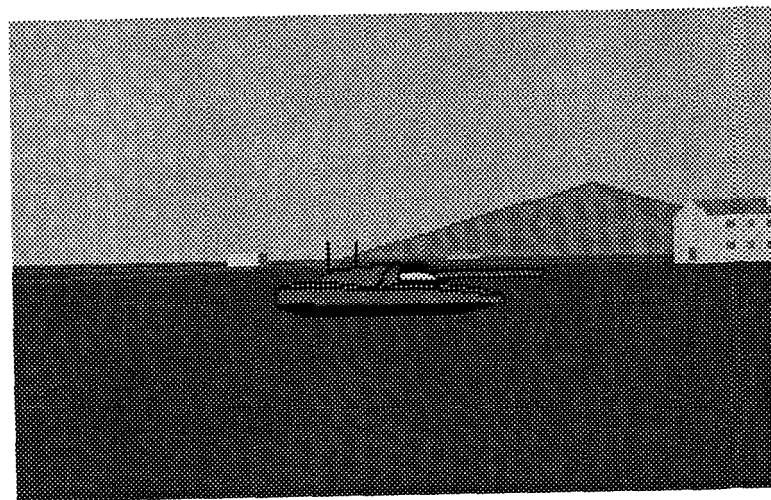
GPS	(Gunner Primary Sight) The Gunner can no longer acquire targets.
Track	The tank cannot move.
Thermal Equipment	The Gunner cannot find targets in the dark and in smoke.
Turret Motor	The turret cannot move.
COAX	The Coaxial machine gun is destroyed.
Engine	Obvious.
Laser Range Finder	The laser sight is destroyed.
Smoke Generator	Obvious.



OUTSIDE SCREEN

OUTSIDE SCREEN [F2]

This screen shows the view from outside the tank. The tank is always in the center of the screen, but you can move the viewpoint around the tank, move the viewpoint up to get a vertical view of the tank and zoom in closer to the tank and farther away from the tank. The farther you get from the tank, the more surrounding countryside you see.



This screen represents in abstract form the information your tank crew is constantly receiving from their senses and the reports from all of their companions in the field.

Other terrain features and objects only appear as they relate to the tank in the center of the screen.

When using this screen, you use the number pad (or the alternate keys explained on page 12) to control the tank. Some commands must use an [Alt] and a number key.

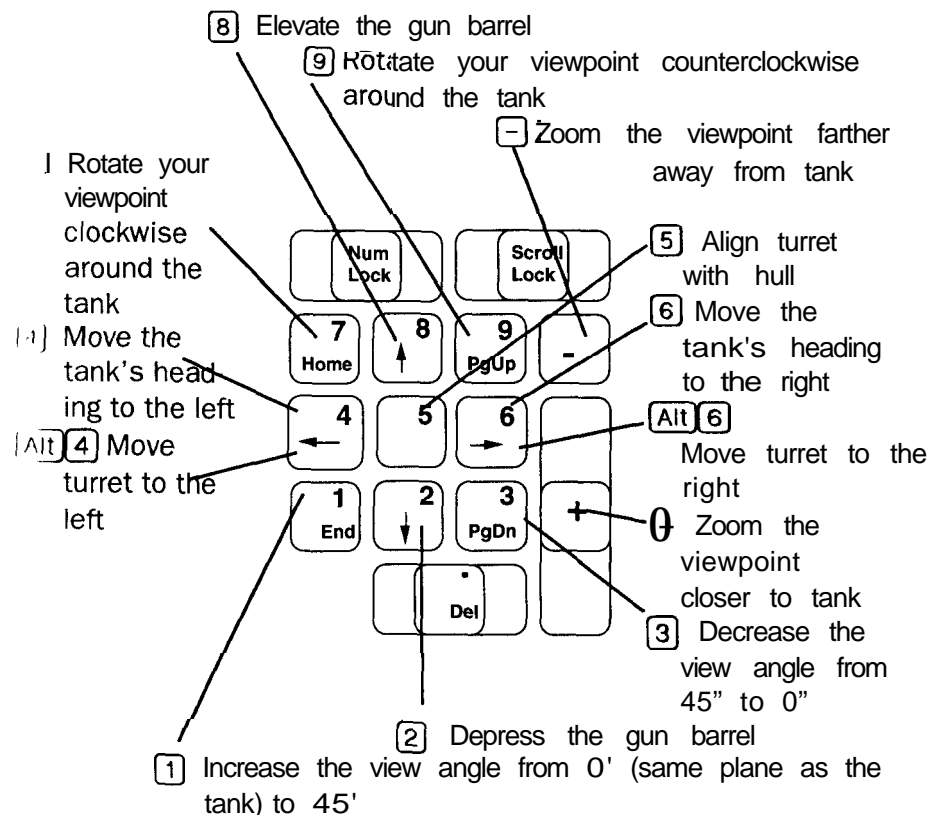
Firing The Main Gun

In both this screen and the **Trailer Screen** [F3] you can use the [Spacebar] to fire the gun, as long as a round is loaded and ready to fire (see **Gunner's Screen** [F5]).



KEYS FOR OUTSIDE SCREEN

The Number Pad



The Extra Arrow Keys — An Alternative to [Alt]

If you have an enhanced keyboard, you can use the extra arrow keys to control the movement of the turret instead of [Alt] [4] and [Alt] [6].

[5] Aligning The Turret

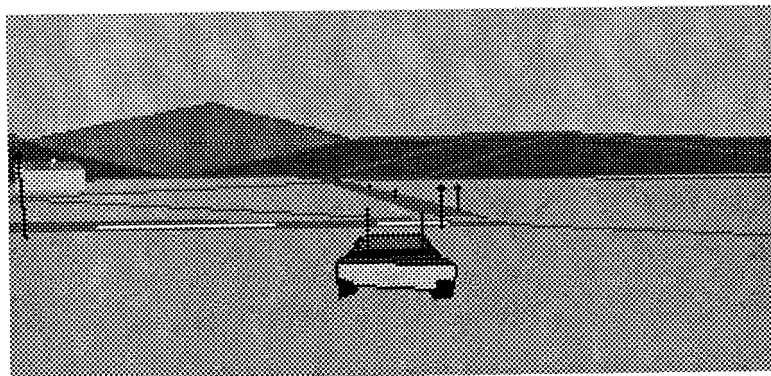
Using the [5] aligns the turret so the gun is bearing on the tank's heading (in other words, it is pointing straight ahead). Now you can aim the gun by aiming the tank. The turret is locked in this position until you hit the [5] again. This option is available in most other screens.



TRAILER SCREEN

TRAILER SCREEN [F3]

This screen takes you behind your lead tank, as if you were following in a trailer. While the tank is proceeding in a straight line, your viewpoint is directly behind the tank. When the tank makes a turn, your viewpoint follows the path of the turn.



The Number Pad

Use of the number pad in this screen is virtually identical to the use in the Outside Screen [F2] except that, since you always have the same viewpoint, you cannot use the [7] and [9] to shift your viewpoint around the tank.

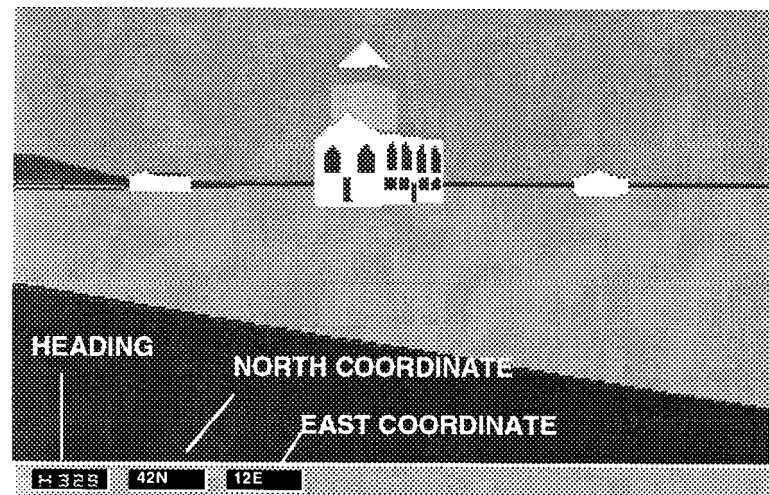
Key	Result
[1]	Increase the view angle from 0° (same plane as the tank) to 45°
[2]	Depress the gun barrel
[3]	Decrease the view angle from 45° to 0°
[4]	Move the tank's heading to the left
[Alt][4]	Move turret bearing to the left
[5]	Align turret with hull
[6]	Move the tank's heading to the right
[Alt][6]	Move turret to the right
[8]	Elevate the gun barrel
[-]	Zoom the viewpoint farther away from tank
[+]	Zoom the viewpoint closer to tank



DRONE SCREEN

DRONE SCREEN [F4]

This screen is called the drone screen because it gives a picture of the battlefield as if the viewer is getting pictures from a reconnaissance drone. This screen is available if you are using the Beginner or Intermediate play options, but is not available in the Expert mode.



The viewpoint can be moved anywhere on the battlefield. A display at the bottom of the screen shows the viewpoint's heading and its current general position (accurate to the nearest kilometer) according to the map grid (see Intelligence Screen, page 28). If you get lost, press [F2], taking you to the normal Outside viewpoint; you come back to the platoon where the Recon screen started, though the platoon's location may have changed. Then, you can go back to the Drone Screen, which will start at the current position of the platoon.

Alternately, you can snap back to some other screen, but you may have no idea of where you really are until you activate the Outside screen.



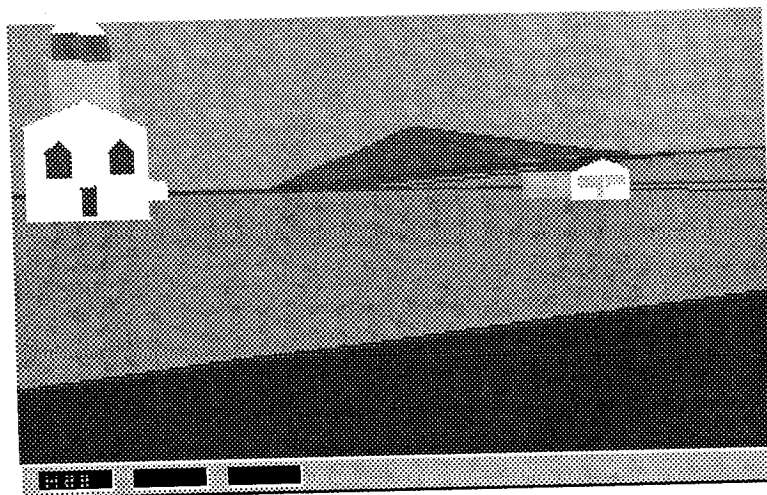
DRONE SCREEN KEY USE

Moving The Viewpoint

The viewpoint moves in the same way that the Outside View (pg. 36-37) does except that the commands affecting a tank are replaced by commands that move the viewpoint away from the tank.

The Number Pad

- 7 Rotates your viewpoint clockwise
- 8 Moves your viewpoint straight ahead
- 9 Rotates your viewpoint counter-clockwise
- 6 Moves your viewpoint to the right
- 3 Decreases the view angle from 45" to 0"
- 2 Moves the viewpoint straight back
- 1 Increases the view angle from 0" (same plane as the ground) to 45"
- 4 Moves your viewpoint to the left



THE GUNNER



The Gunner

You swing the turret down the road and activate the high magnification function on your gunsight. You can see the approaching vehicle and realize that there are more following. The profile is wrong for a Bradley scout; that silhouette is Russian!

You alert the others as you activate the laser rangefinder. The lead tank is already in range, but you want a later tank, one that will help clog the pass. Perhaps its demise will not alert the Russians immediately.

In seconds the last tank in the first formation is in your sights. You lock him in your laser sight, select a Sabot round and hold your breath. You press the button, then move the turret to the next tank in line as your shot heads for its target.

On the edge of the sight you can see your first target blow up as you zero in on the lead tank in the formation. Before you can fire, it blows up, the victim of one of your comrades. You spin the sight to catch another and see the remnants of their formation pivot in place and point their distinctive rounded noses in your direction. The enemy tanks know where you are, now. You cook off another shot as they start up the hill toward you, their 125mm guns returning your fire. Time to move!

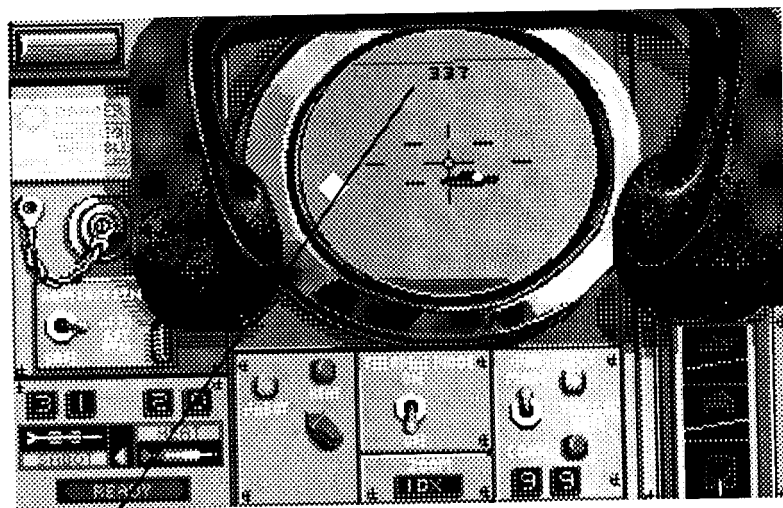




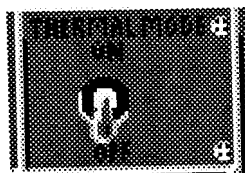
GUNNER'S SCREEN

GUNNER'S SCREEN [F5]

This screen presents the Gunner's position in the tank. As gunner you are in charge of firing the main gun and the coaxial machine gun. You also load the guns in this position — a function that is normally handled by a loader who is not featured independently in this game.

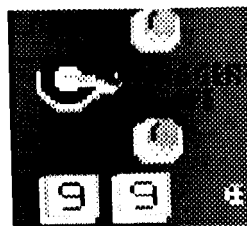


Compass Direction — This indicator at the top of the screen always shows the compass bearing of the gun sight.

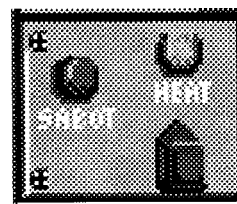


Thermal Switch turns on the thermal imaging equipment. Use [T] to toggle on and off.

Gun Switch selects whether to fire the main gun or the coaxial machine gun. Hitting @ toggles the choice between those two and a third, "Trigger Safe," position that keeps both guns from operating.

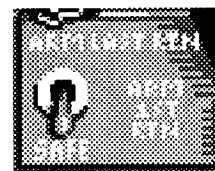


LASER SIGHT



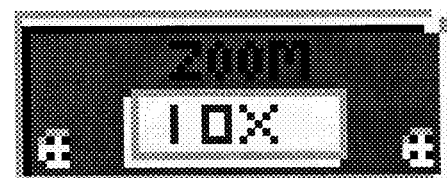
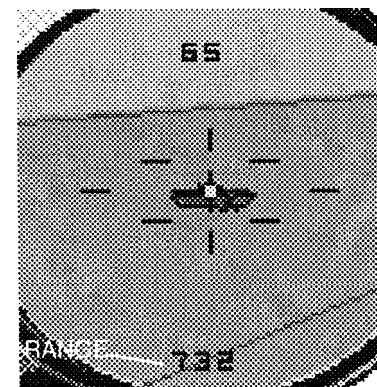
Sabot — Selects a Sabot round to be fired. Use [S] to select.

HEAT — Selects a H.E.A.T. (High Explosive Anti-Tank) round to be fired. Use [H] to select.



Laser Sight — When turned on, the laser sight shows the configuration below. Use the [L] to toggle this mechanism on when you go into battle. In the side position it targets the nearest object. In the up position it targets the farthest object.

Then bring the crosshairs close to a target and press [Enter] to get the range reading shown to the right. This is the distance to the target in meters. Remember that the M1 gun has a range of about 3000 meters. Hit [Enter] again to lock the Sight onto the target. If the *laser lock-on works*, the center circle of the crosshairs turns red and the sight follows the target as long as it is in sight. If you wish to stop shooting at that target, hit the [Enter] again.



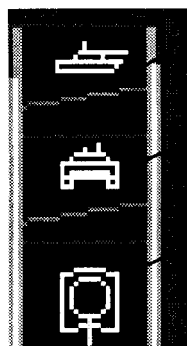
Zoom allows the gunner to increase the magnification on his gun sight. The normal setting is no magnification (1X). Use the [Z] to

toggle between this setting, 3x magnification and 10x magnification.



ATTITUDE AND AMMUNITION

Tank Attitude Screen



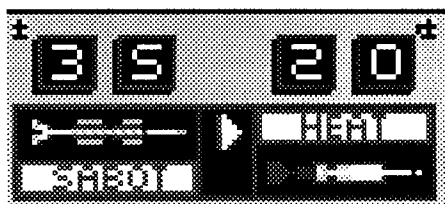
This set of screens tells you:

Climb Angle — whether the tank is moving forward on the level, uphill, or downhill,

Roll **Angle** — whether the tank is moving sideways to a slope, **and**

Turret **Angle** — how the gun is bearing compared to the heading of the tank.

Ammunition Supply Screen



This display tells you how many rounds of each type of main gun ammunition you have left.

The Ready Light



Once you have selected the ammunition you wish to fire, this display will either read

“Loading” (meaning the gun is being loaded and cannot be fired) or “Ready” (meaning the gun is ready to be fired).

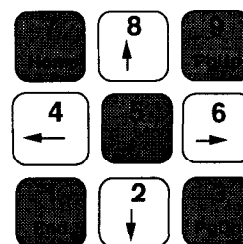
TO STOP THE TANK

There will be times when you want to stop the tank while in Gunner Mode. Just strike the **[B]** and hold it down — this activates the Brakes and is equivalent to yelling at the driver to stop.



AIMING AND FIRING

Aiming the Gun — The Number Pad

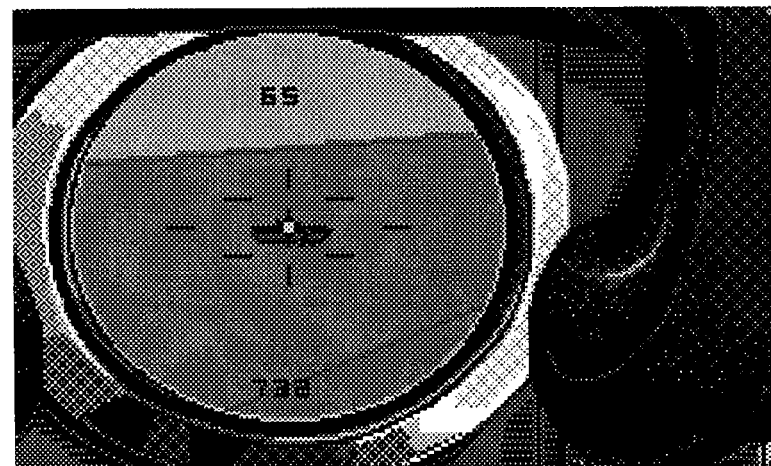


[8] Elevates the gun sight (and gun barrel)

[4] Moves the turret bearing to the left

[6] Moves the turret bearing to the right

[2] Depresses the gun sight (and gun barrel)



TO SHOOT

Once you have selected a target and the ammunition to shoot at it, just hit the **[Spacebar]**.

Full Shooting Procedure

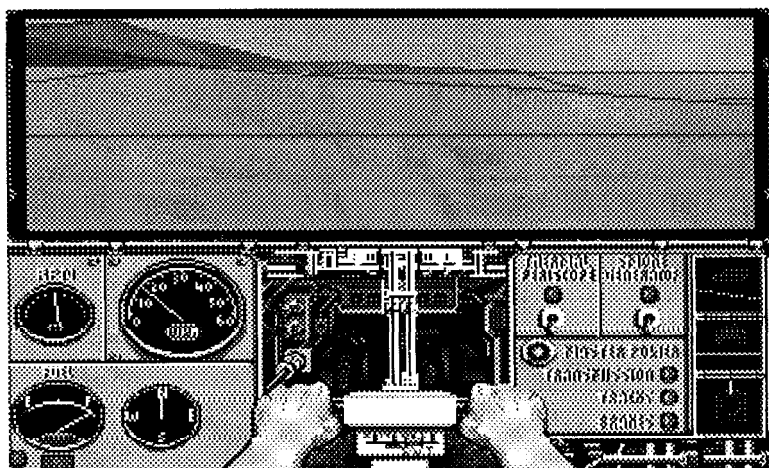
1. Set Gun to Main (Toggle the **[G]**).
2. Select type of ammo (Toggle the **[S]** or **[H]**).
3. Turn on Laser Sight (Toggle **[L]**).
4. Move turret in direction of target (use **[↑]**, **[←]**, **[→]**, **[↓]**).
5. Get range to target (**[Enter]**).
6. Lock Laser Sight onto target (**[Enter]**).
7. Wait until Ready light is on.
8. Fire (using **[Spacebar]**).



DRIVER'S SCREEN [F6]

The Driver

You realize that it's time to stop being a spectator and take an active hand in the festivities. Slamming the tank into reverse, you back down the hill until the Soviets are no longer visible, then spin left to circle the hill and strike the enemy tanks on the flank. Just as you start, there is an explosion ahead and to the left, right where you think the flank tank had been stationed! The Russian units to the rear of the one you attacked are sweeping around your position. You slam the tank into Drive and aim for the explosion. There should be lots of enemy to engage there...



This screen presents the battlefield from the driver's point of view. Using this screen, the driver controls the movement of the tank.

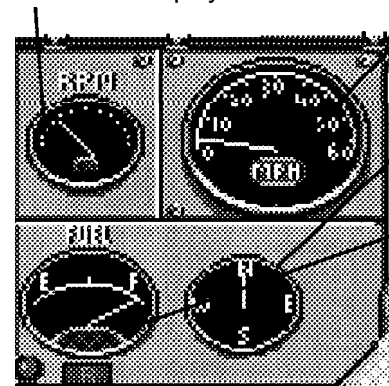


Thermal Periscope — This switch turns on the thermal imaging system for the driver so he can see at night or in fog or smoke. Toggle the [T] to turn this feature on and off.



The Gauges

RPM — Displays the current RPM of the tank engine.



MPH — Gives the tank's current speed in Miles Per Hour.

Compass — Gives the tank's current compass heading.

Fuel Gauge — Gives the tank's current fuel supply.

Smoke Generator — Sends a fine spray of oil into the engine exhaust system that creates a dense cloud of smoke to obscure the area around the tank. Toggle the [S] to turn the smoke on and off.



Master Power Gauge Light — As long as this light is on, you have an operating engine.



Transmission Light — If on, the transmission has been destroyed.

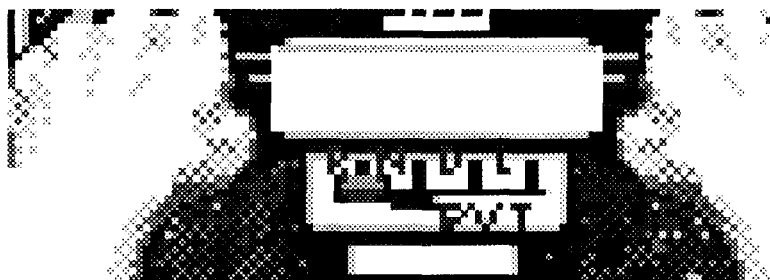
Tracks Light — If on, the tracks are destroyed.

Brakes Light — If on, the brakes are engaged.



Starting the Tank

The tank can be started by striking one of the throttle keys (described below) or the **[+]** (as described below). After starting the tank, put it into gear.



Selecting Gears

Gear Selection is done with the keyboard. Press the following keys to get the required gear.

[R] Reverse. Puts the tank in reverse.

[D] Drive. Puts the tank into Drive. Normally there is no need to use any other gear for forward movement.

[N] Neutral. The gear the tank stays in when at rest. This is the setting the gears should be in when you leave the tank in position for defense.

[L] Low. Used for tough uphill or dangerous downhill movement, particularly the latter.

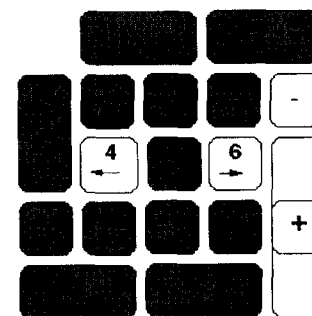
CAUTION: Stop the tank before moving from D or L to R and from R to D or L. Otherwise, the transmission will be damaged!



Driving The Tank

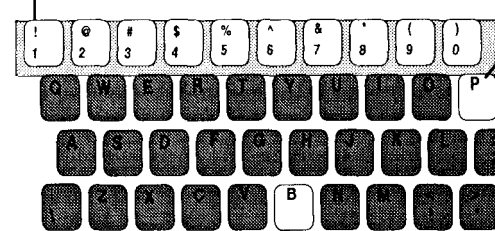
Actually driving the tank can be done with joystick, or by using the number pad.

- [−]** The minus sign decreases the throttle in 1% increments.
- [+]** The plus sign increases the throttle in 1% increments.
- [4]** Steers the tank to the left. The hands on the screen turn the steering handle to the left.
- [6]** Steers the tank to the right. The hands on the screen turn the steering handle to the right. Removing pressure from the key stops the turn.



Other Keys Usable by the Driver Are:

- [1] - [0] Throttle Keys.** Control the throttle of the tank. They represent 10% increases in the acceleration of the tank, from 10% (**[1]**) to 100% (**[0]**).
- [P] Pivot.** Sets the treads so that one turns forward while the other turns back. This allows for a quick turn in either direction. The tank must be stopped before the pivot function is operable.
- [B] Brake.** Puts on the brakes. Keep up pressure until the tank is stopped.

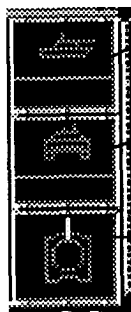




TANK ATTITUDE SCREEN

Tank Attitude Screen

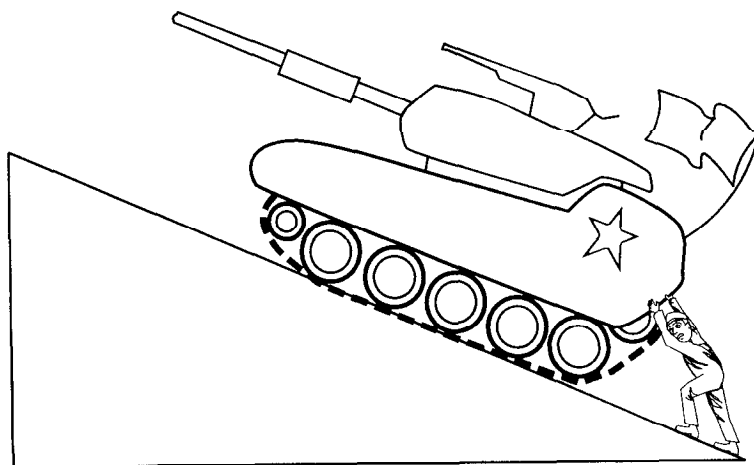
This set of screens tells you:



Climb *Angle* — whether the tank is moving forward on the level, uphill or downhill.

Roll *Angle* — whether the tank is moving sideways to a slope.

Turret *Angle* -how the gun bears compared to the heading of the tank.



HINTS FOR GOOD DRIVING



Hints For Good Driving

1. Stay aware of your *surroundings*. The Driver's slot gives a very limited view of your immediate environment. Make good use of the Outside Screen (F2) to get updates of what is around you. This represents the continued information you would get from the Commander and Gunner of the tank and information from other tanks.
2. Conserve your *fuel*. The M1's turbine is a very efficient engine — for a tank. It also has a very large fuel tank.

This is just as well because the M1 consumes *up to 5 gallons* per mile. Keep your speed down to about 25mph except under the most dire circumstances, or you may find yourself out of fuel in the middle of an enemy platoon. As a corollary to this advice — *keep an eye on your fuel gauge*.

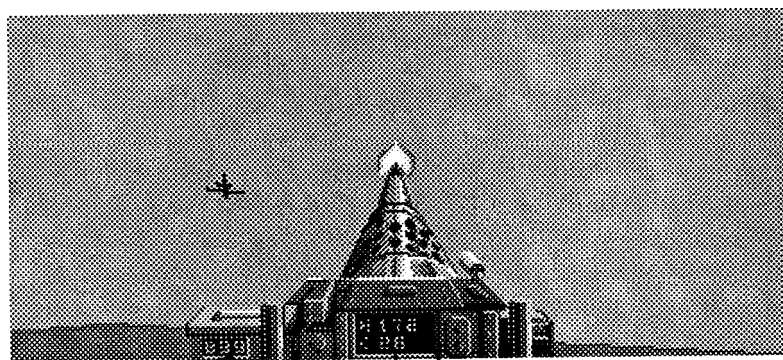
3. Watch those *slopes*. The difference between an easy slope you can take in Drive and a difficult slope you must use Low gear on is not always obvious.
4. *Keep your front* to the *enemy*. Your tank's best armor is on its front and turret. If you are facing the enemy, you have the best survival chance if the tank is hit.
5. Watch out *for your other tanks*. Remember that the other tanks in your platoon follow your lead slavishly, maintaining formation at all times. Do not run them into buildings or trees or enemy vehicles while avoiding collisions yourself. You could find yourself in battle alone while the rest of the platoon is still hung up on a telephone pole.



COMMANDER'S MACHINE GUN

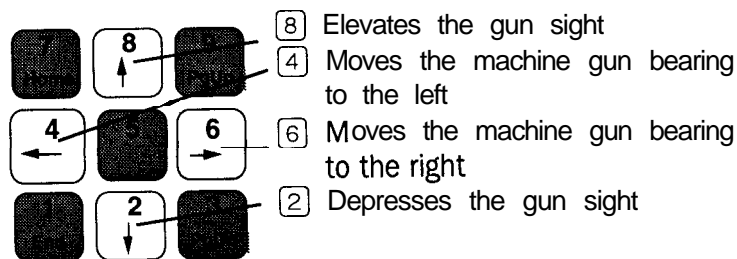
COMMANDER'S MACHINE GUN (F7)

As Commander, you have a .50 caliber (12.7mm) machine gun mounted topside to use against lightly armored vehicles, aircraft and personnel. The screen shows the gun and its sight, with displays at the base of the gun showing the remaining ammo, the compass heading of the gun (this has nothing to do with the heading of the tank) and the climb, or angle of elevation, of the gun.



Ammunition Remaining Heading — ° from north
Climb — ° of gun elevation

Aiming the Machine Gun — The Number Pad



TO SHOOT

Once you have selected a target, hit the **Spacebar**. Each strike on the space bar shoots one burst of machine gun ammunition.



SHOOTING HINTS

Shooting Procedure

1. Aim using **↑**, **←**, **→**, **↓**.
2. Fire using **Spacebar**.

Helpful Hints

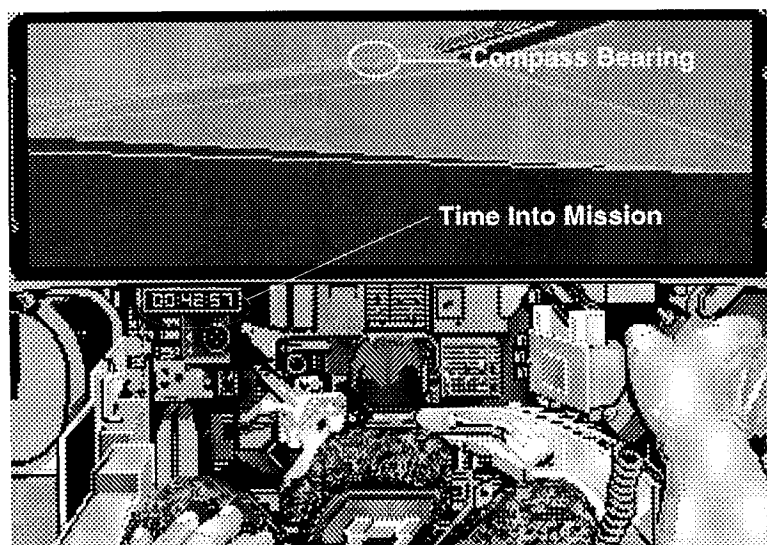
1. *Lead Your Targets.* Particularly when attacking aircraft, which move deceptively fast, aim where you think the target will be when your machine gun bullets reach it. The machine gun fires tracer ammunition, so you know where the bullets are going; use that information to improve your shooting.
2. *Watch Your Ammunition.* A machine gun uses a lot of ammunition fast. Watch the Ammunition display. It shows your *total* ammunition since the gun reloads automatically. When you run out of this ammunition you are out for the rest of the battle.
3. Watch your orientation. The machine gun moves by itself. The heading shown applies to the compass, not to the direction the tank is travelling. Also, note that all the machine guns on the tanks in one platoon will always point in the same direction. If you switch from one tank to another, the gun will point the same direction as the previous gun.
4. *Use The Machine Gun for Finding Targets.* The quickest way to find targets for the main gun from "inside" the tank is to use the machine gun compass bearing to find a target's direction, then go to the Gunner's Screen (**F5**, pages 41-45), find the same bearing, and find your targets.



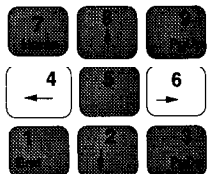
CUPOLA SCREEN

COMMANDER'S SCREEN — CUPOLA [F8]

This gives you a view from the independently rotating cupola on top of the turret. The view from this cupola does not match that of either the gunner or the driver. There is a display at the center top of the window to show the compass direction of the cupola's bearing. There is also a time readout to show how many minutes are left in the mission — important for missions with a time limit.



From this cupola, the Commander can observe areas not currently observed by the gunner or driver. The cupola can be moved using the joystick or by using the keyboard number pad.



Using The Number Pad

- [4] Turns the cupola to the left
- [8] Turns the cupola to the right



SMOKE AND RESUPPLY

Other Commands From This Screen

[S] **Smoke Grenades** can be fired only from this screen. Press [S] to shoot a spread of smoke grenades to each side of the bearing of the turret gun that will obscure all sight in the area for about one minute. Use this to cover yourself if the tank is damaged.

[R] **Resupply** your tank by taking it to a supply depot (see Missions) and pressing [R]. A screen identical to the Armament Screen on page 14 appears so you can choose your mix of Sabot and HEAT. The tank is refueled at the same time. This is done to every tank in the immediate area at the same time by pressing the [R]; you do not have to do this for every tank in the area individually. However, this means that every tank departs from the supply depot with exactly the same mix of ammunition, no matter what they arrived with.

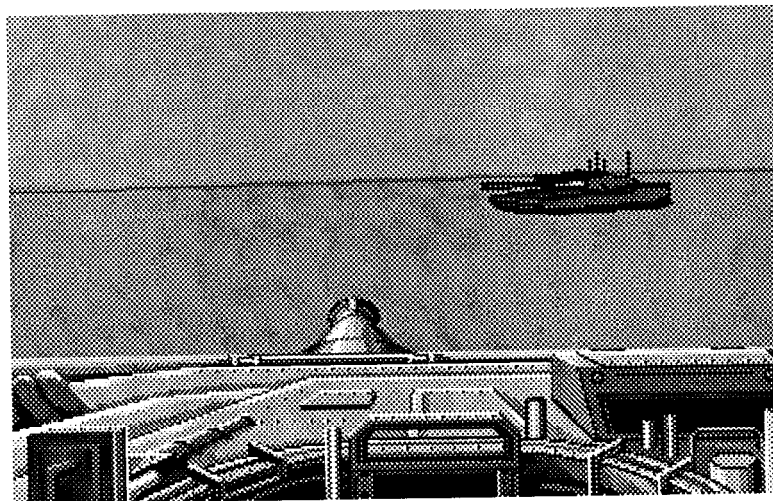
The computer will inform you when fueling is completed and you can leave the depot. While you are at the depot *you can be attacked* and the depot can be destroyed at any time.



TOPSIDE SCREEN

COMMANDER'S SCREEN — TURRET TOPSIDE [F9]

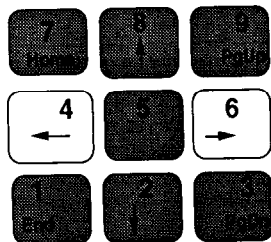
This gives you a view as if you were sitting on the top of the tank with the hatch open. It gives you a wide view but leaves you very vulnerable.



From this screen, you can move the turret to give you a view of the whole area. Note that you are not turning yourself around, you are turning the entire turret. Your point of view is the same as the bearing of the turret.

Turning the Turret

Use the number keys to turn the turret.



[4] Turns the turret to the left

[6] Turns the turret to the right



ENDING/SCORING THE GAME

ENDING AND SCORING THE GAME

There are four ways to end the game. Each way gives you a Fitness Report (FitRep), or score:

1. **Time Limit:** Most missions have a time limit. In modern warfare, time is very important. Objectives must be accomplished within a particular timeframe, or they are essentially not accomplished. Once the time limit has been reached, the game is over and you receive a FitRep based on how much of the mission was accomplished before time ran out.
2. **Mission Accomplished:** If all of the objectives of a mission have been achieved, the game is over. Your FitRep depends on how quickly you accomplished the mission and how many casualties you took accomplishing the mission.
3. **Defeat:** If your tanks and other vehicles are all destroyed before you accomplish your mission, the game is over. Your FitRep depends on how much of the mission you accomplished before running out of resources. This score will not be a very high one.
4. **Player Quits:** The game ends if you leave it by hitting the ESC key and choose End Game. See Exiting The Game on the previous page. Your FitRep will be compared against the five best for the game and recorded, but you will not see the Award/Scoring Screen described below.

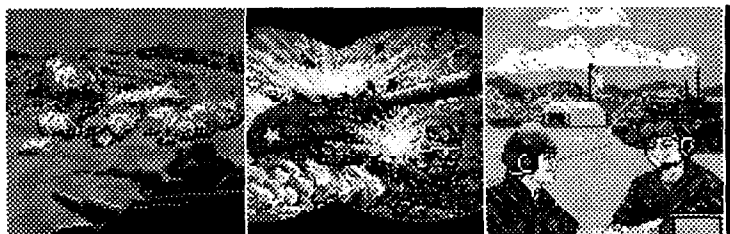
Scoring The Mission

You receive a score for every mission you attempt, no matter how much of the mission you accomplish. In the Mission Descriptions, this score is called a Fitness Report, or FitRep. Your FitRep is based on four criteria.



AWARD SCORING SCREEN

1. **Difficulty Level:** Your FitRep for a mission is increased if you attempt it at an Intermediate Level, and increased further at an Expert Level. See pages 8-10.
2. **Achievement:** Your FitRep is greater for the number of objectives you achieve. You are given points for every enemy tank or other vehicle destroyed and every objective area occupied.
3. **Timeliness:** Your FitRep is modified to account for the amount of time you took to achieve your objectives, or to achieve whatever you did accomplish. The most achieved in the least time earns the highest score.
4. **Casualty Level:** Your FitRep is also modified by your casualty rate. You get more points if you achieve your objectives with less casualties.



FORT KNOX - SUDDEN DEATH

ANTON WIDJAJA	01098
MR ENG AN JIO	01078
BILLY SUTYONO	01067
SKY CHANG	01065
STEVE PERRIN	00985

Recording Your Score

If your score is one of the best five scores on record for that mission, no matter when you break off the game, you are asked to type in your name beside your score shown on the Award Scoring Screen. It gives you your score and shows where it is among the best scores for the mission. If you did not make the top five, your score is still shown for your reference.

III. THE MISSIONS



HOW TO PICK A MISSION

THE MISSIONS

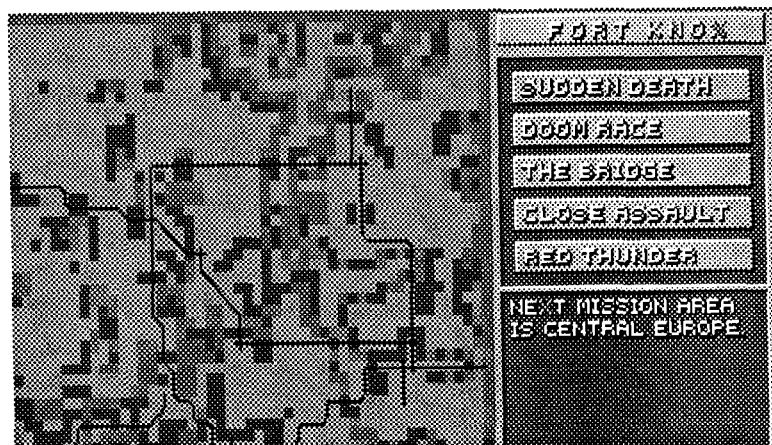
TANK is played in missions. Each mission can be played either on an individual tank basis (with the computer handling all the strategy and tactics) or they can be played just at a platoon and/or battalion level, with the player never going beyond the screens available from the Main Menu (see pages 16-31).

There are three mission areas to choose from: the Fort Knox Training Ground, Central Europe and the Middle East.

Each mission description gives you the S-2 Operations Briefing on what needs to be done, the S-4 Logistics statement of your resources for the mission, the S-2 Intelligence report on the expected resistance and the S-1 Personnel statement on the mission's possible impact on your Fitness Report (FitRep), i.e. your score for the game.

Fort Knox

Most of the basic training for armored warfare in the United States Army is done at Fort Knox, Kentucky. All tank commanders get their basic training here. The missions here are meant to duplicate the training missions a tank commander or crewman faces while stationed at Fort Knox.

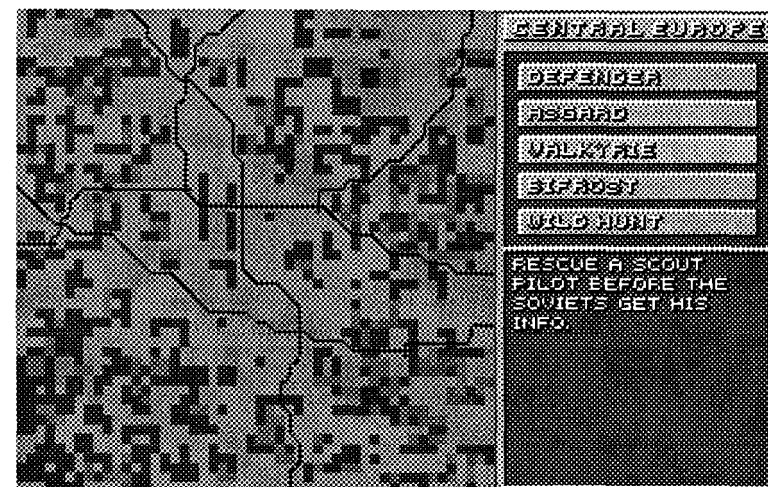


CENTRAL EUROPEAN THEATER



Central Europe

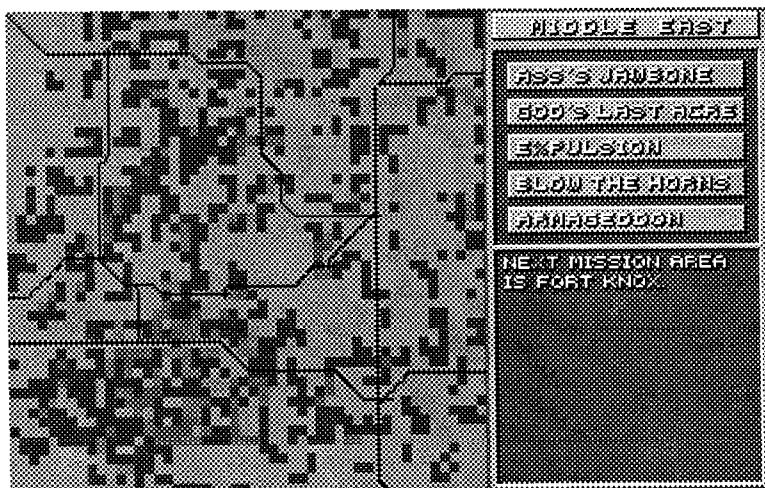
The expected battleground for direct confrontation between American and Soviet tanks is Central Europe. These missions simulate the problems facing an American commander who must lead his armored forces against the Soviet invaders in the first days of World War III. The missions take place around the town of Fulda and the so-called Fulda Gap, the probable course of any attack into West Germany by the Warsaw Pact.





Middle East

Real tank warfare has been the exclusive preserve of this area since the 1960s. Its broad plains and rocky soil make armored warfare almost mandatory. In these missions you face the problems of an MI-equipped tank commander against Soviet-equipped Arab forces in a new Mideast War. The missions take place along the Israeli/Lebanese/Syrian/Jordanian border, a continuing hot spot today.

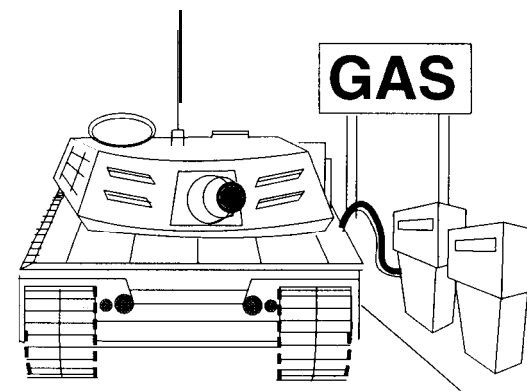


READING THE MISSION MAPS

The following mission maps show the basic maps of the area, along with overlaid lines, boxes and print to indicate the general location of the important areas in the missions. The maps displayed for each mission on the computer screen will have more or less detail, depending on what level of difficulty you are playing at (see pages 7-9).

Finding Supply Depots. Supply depots where you can replenish a tank's ammunition and fuel are available in some of the missions.

Look for mention of them in the S-



4 Resources report. When a tank gets close to the depot, strike **R** as described in the Commander's Cupola Screen (page 55) and the tank automatically fills with fuel. You will also see the Armament Screen (last seen when starting the game, page 7), and you can pick your ammunition for the rest of the battle. This procedure takes the tank or tanks out of the battle for five minutes.

Location of the supply depots is marked on the mission maps herein with a pyramid shape. The enemy can destroy them.



FORT KNOX: SUDDEN DEATH

MISSION NAME: SUDDEN DEATH

MISSION AREA: FORT KNOX

S-3 BRIEFING: Sergeant Waller calls you in to his office. "This is your final exam. Pass it, and you become a big, bad tank crew. Blow it, and maybe they can find you a job drivin' a soft drink truck to resupply the PXs.

"You get one tank. All you gotta do is drive from here at Base Blue over to Base Red. We expect you to get there in half an hour. You can use any road you want, but stay off the cross country stuff. You'll have lots of time for that later.

"Besides, if you don't take the road, you miss the scenic attractions. You'll see some other MIs sittin' around out there. Don't run into them. Don't shoot at them. Of course, you'll see some T-80s and Shilkas out there. Since you're a beginnin' driver, they won't be movin' while you're around. However, they will be shootin'. At you. We don't want you shouldn't get into the spirit of things, so feel free to shoot back. It'll look good on your FitRep if you hit one or two.

"But don't get too trigger-happy. It won't look good on your Fitrep if you shoot an MI or a Vulcan, so make some use out of those briefings and make sure you know what you're shootin' at.

"The M1A1 is the best tank on the road. You can take some damage and keep going. But, if you take too much, it stops workin' and the mission is over. In that case, you might want to brush up on your truck drivin'.

"Don't run into any telephone poles or trees or buildings. The grounds people get annoyed, and I don't want to have a mad groundskeeper chewin' on me just 'cause one of you eightballs can't tell a telephone pole from a road-bed. It reflects badly on my teachin', and I hate havin' one of my students actin' like he didn't learn what he was supposed to."

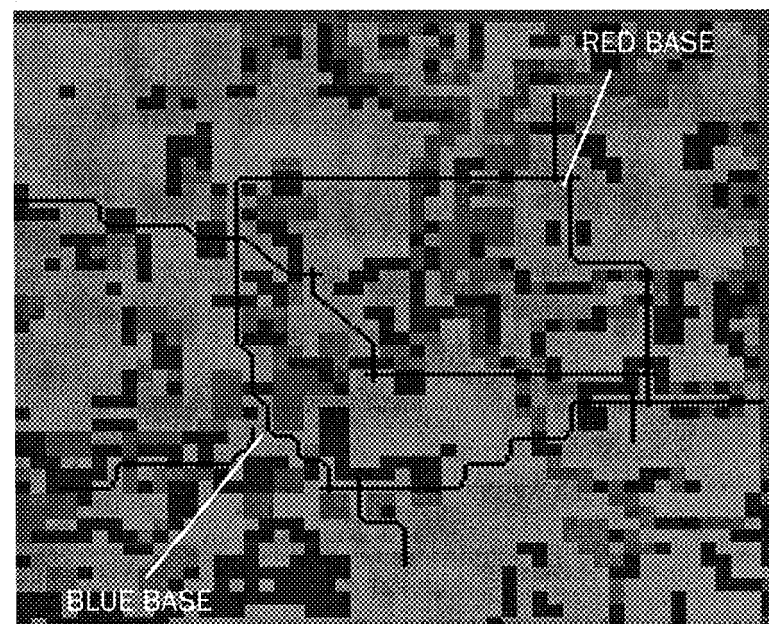
FORT KNOX: SUDDEN DEATH



S-4 RESOURCES: You have one M1A1 tank. There are no supply depots in this mission.

S-2 REPORT: There are more than five enemy vehicles to be found.

S-1 FITREP: You receive points for destroying enemy targets and completing the mission within the time given. You will be docked for attacking the wrong target, arriving late, receiving damage or colliding with any object.





FORT KNOX: DOOM RACE

MISSION NAME: DOOM RACE

MISSION AREA: FORT KNOX

S-3 BRIEFING: Captain Hastings addresses your two platoons in the briefing room of Blue Base.

"You gentlemen all managed to pass the Sudden Death graduation from basic tank school. Congratulations. Now, we're going to find out how you handle a real tactical challenge.

"You have two platoons of M1A1s. The opposing force has two platoons of T-80s. Your mission is to race the opposition to the Old Church in the Northwest section of the training range, then defend the building against the enemy. You will position one platoon to intercept the opposition before the race begins. The other platoon must race to the church.

"Naturally, the opposing force will also have one platoon in an ambush position somewhere along your route. Let's avoid being destroyed by the ambushers, shall we?

"When your vehicles reach the church, defend it against the opposition. Do not let the church be destroyed. It looks bad on your FitReps if you allow historical landmarks to be blown up.

"If, by some mischance, you let the opposing force get to the church first, you must destroy them without damaging the church.

"Take your time; you have all day to accomplish this mission. It's not over until either one or the other of you has no tanks left to take the church with.

"Remember, you must ambush the opposing force with one platoon, avoid the opposing force's ambush with the other platoon, take the church, and keep the opposing force from taking the church. Don't let the church be blown up.

"Good luck, gentlemen. May you get to the church on time." He smiles at his own joke and lets you get to your tanks.

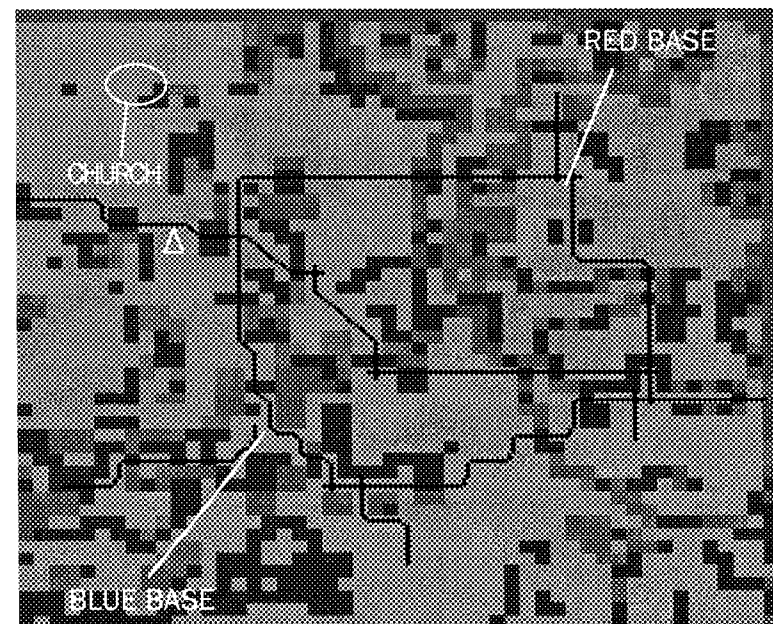


FORT KNOX: DOOM RACE

S-4 RESOURCES: You have four M1A1 tanks at Base Blue and a platoon to place anywhere along the probable enemy route. There is a supply depot on the western road.

S-2 REPORT: The opposition has a platoon of T-80 tanks at Base Red and others somewhere along your probable route.

S-1 FITREP: You gain points for every enemy vehicle destroyed and every vehicle you have in operation when the battle is over. You lose points if the church is destroyed.





FORT KNOX: THE BRIDGE

MISSION NAME: THE BRIDGE

MISSION AREA: FORT KNOX

S-3 BRIEFING: Captain Hastings brings you into the Blue Team briefing room. Besides your own men, you see a bunch of men with artillery patches on their fatigues waiting for the briefing.

"You gentlemen did so well on the church wargame we have another little tactical problem for you. Now that you know how to work with a bunch of tanks, let's see how well you do with some artillery to back your play.

"You get two platoons of tanks, just like last time. One consists of the M1A1s you're used to. The other one, however, consists of four brand-new M1A2s. They've got a bigger gun and tougher armor, but they don't carry as many rounds, so use them wisely. And try not to get them too dinged up. Your basic mission is to take your tanks to the bridge on the central highway and take the bridge.

"You also get the use of one artillery battery. Lieutenant Harker, here," Harker waves to you, "will be on call. You can call on his battery of 155s to help you out, but they'll only shoot three times for you, so make your fire missions count.

"The Red Team is sending the same size force. They also have artillery, so keep your heads down. You have to fight them for the bridge, and it won't be any easier than it was fighting them for the church.

"This time, however, you don't have to worry about keeping the bridge intact. Assume the world-famous Army Engineers will patch it up if you bang it up. They'll complain a lot, but they're used to patching up that bridge by now.

"If you have the bridge site (whether or not the bridge is intact) and you still have some operating tanks by the end of a half hour, you win. If you don't, you get to try it again 'til you get it right."

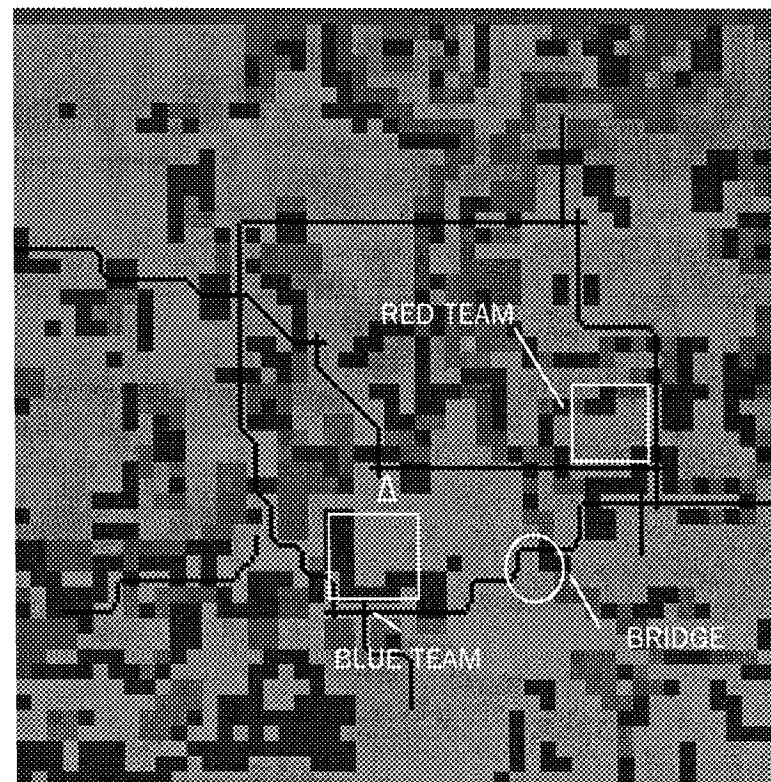


FORT KNOX: THE BRIDGE

S-4 RESOURCES: One platoon of M1A1s, one platoon of M1A2s, one battery of 155mm artillery with three fire missions. There is a supply depot to the north of the Blue Team staging area.

S-2 REPORT: The opposing forces will deploy two platoons of tanks and an artillery battery.

S-1 FITREP: Your FitRep will improve with every opposing force vehicle destroyed and for holding the ground on both sides of the bridge.





FORT KNOX: CLOSE ASSAULT

MISSION NAME: CLOSE ASSAULT

MISSION AREA: FORT KNOX

S-3 BRIEFING: The Battalion Commander, Lt. Colonel Schubert, summons you to the briefing room at Blue Team HQ. As you file in, you realize that not only are your own mates and some artillery people present, there are some Air Force flyboys as well. When everyone settles down, Col. Schubert begins.

"You are going to be performing a close assault of a prepared position. You must assault and take Red Team's HQ. You have the use of three platoons of tanks and support vehicles, including air support. The opposing force has a smaller tank force, though they have more artillery batteries.

"This is going to be an added challenge for you, as you have to coordinate artillery, anti-aircraft artillery and air support of your own with your tank group. Make the maximum use of the suppressive fire of the artillery and the spotting and neutralization capabilities of the air support. You may use the anti-aircraft vehicles either as supplementary tanks or as protection for your artillery.

"You have superior numbers, but the opposing force has position. You have one hour to drive them out of their positions and take the Red Base. Remember that your basic mission is to occupy the base, not destroy opposition vehicles, though we don't mind if you do that too." He waits for your laugh, then continues. "If you get your tanks and support vehicles into the town by the end of the hour, you will have fulfilled your mission.

"Good luck."

As you leave the briefing room, the A-10 pilots wave jauntily and say, "See you groundpounders at Red Base!" They pile into their jeep and head for their airfield. The Vulcan jockeys, on the other hand, look at you with some trepidation. How do you intend to use their potentially useful but very thin-skinned vehicles?

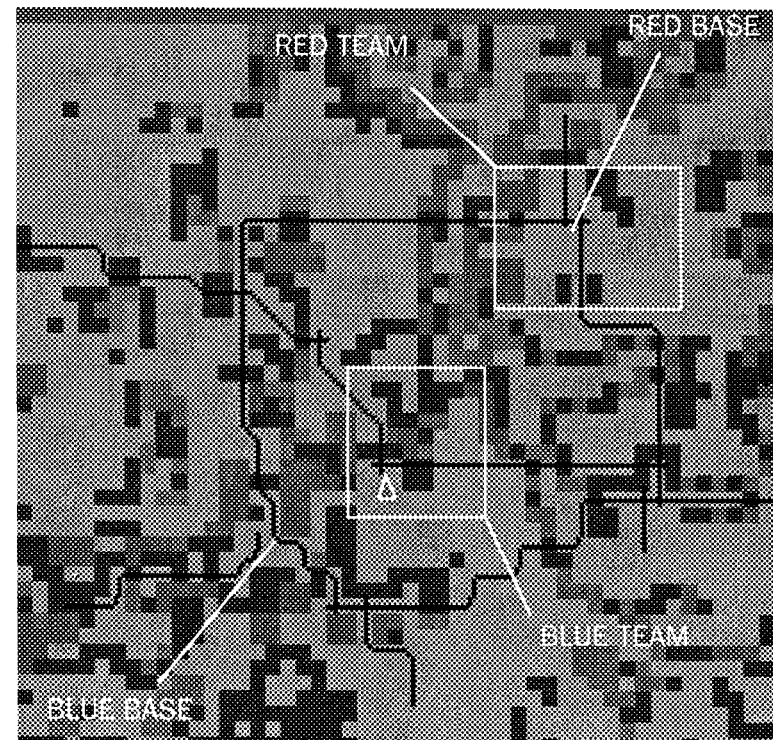


FORT KNOX: CLOSE ASSAULT

S-4 RESOURCES: You have two platoons of M1A1 tanks and one platoon of M1A2 tanks. You can call on two A-10 Thunderbolt IIs (Warthogs) and five fire support missions from the 155mm battery. You also have a platoon of M163 Vulcan Anti-Aircraft Artillery (AAA) vehicles that you may deploy in any way you wish. There is a supply depot in your staging area.

S-2 REPORT: The opposition has two platoons of tanks of undetermined type, some artillery and some aircraft. They may have AA capability of their own.

S-1 FITREP: Your FitRep rating will improve with every opposition vehicle you destroy, but will improve even more with every vehicle you manage to get into Red Base before the time limit is up.





FORT KNOX: RED THUNDER

MISSION NAME: RED THUNDER

MISSION AREA: FORT KNOX

S-3 BRIEFING: After the successful assault on Red Base, you have returned to Blue Base for refurbishment and R&R. Now your headquarters platoon is called into the briefing room by Colonel Schubert. Once again, the briefing group also includes artillery handlers, A-10 pilots and Vulcan jockeys

"As you know, our victory over the Red Team was not as complete as we would like. They still have units unaccounted for. We are going to try to flush them out as well as get a convoy of needed supplies to the troops now garrisoning Red Base and the Red Team airfield.

"You, lieutenant," he says, looking directly at you, "will lead your platoon and the Anti-Aircraft platoon to guard the convoy going to Red Base. The convoy consists of six trucks and two jeeps under the command of Captain Bing." Bing waves to you from his seat amongst his truckers.

"We are not wasting vehicles by sending them empty. The supplies these vehicles carry are vital to the force at Red Base. Do not let the opposition destroy the convoy."

"I would like to indicate my whole-hearted support of that proposition," adds Captain Bing.

"Precisely," says the colonel. "Captain Bing's vehicles are unarmed. You must provide any firepower needed along the route. Unfortunately, opposing force guerrillas have destroyed the bridges on the two most direct routes to Red Base. You must take the longer, southern route. You can expect the opposing force to be waiting for you.

"The artillery batteries here and at your destination can give you some support. You may call on three fire missions from each of them. Also, Lieutenant Avery and Lieutenant Dickens," the A-10 pilots wave, "are on call any time you need them.

"Good luck."

You think, "I'm going to need all the luck I can get."

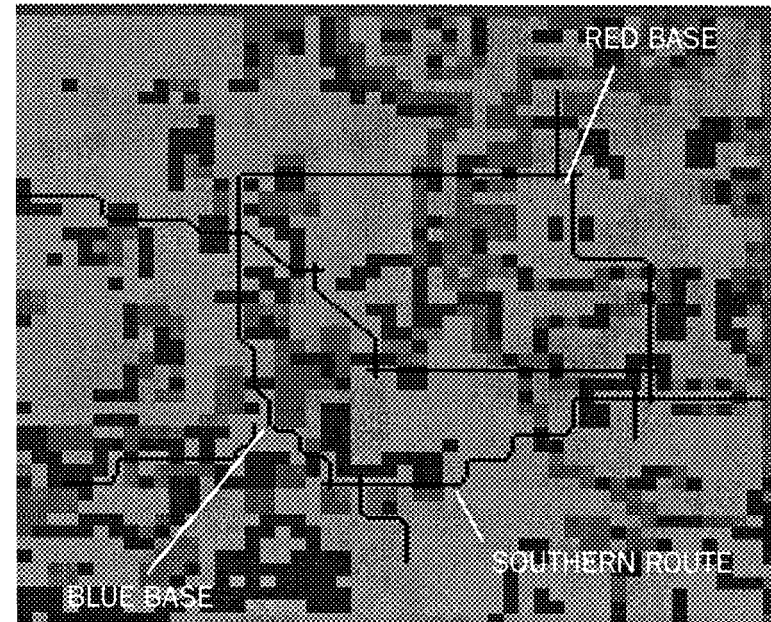


FORT KNOX: RED THUNDER

S-4 RESOURCES: You have one platoon of M1A1 tanks, one platoon of M163 Vulcan AAA vehicles, three fire missions each from artillery batteries at the start and end of the convoy route and two A-10s on call. There is no supply depot on this mission.

S-2 REPORT: Opposition forces known to be in the area include tanks and Frogfoot aircraft. The opposition may have access to other resources.

S-1 FITREP: Your FitRep will increase with any opposition vehicle destroyed, and increase more with each convoy vehicle you get to Red Base intact. Your rating will decrease with every convoy vehicle destroyed.





EUROPE: DEFENDER

MISSION NAME: DEFENDER

MISSION AREA: GERMANY

S-3 BRIEFING: For the last six weeks, the papers have been full of charges and countercharges as the United States and Soviet Union traded accusations over the latest dispute. It all seemed like Standard Operating Procedure, but this time it's gotten more press than any incident since the Berlin Wall. Last week the US Army told you to send your dependents back to the States and put your unit on 24 hour alert. Now the Captain has come back to your *laager* at Schlitz after meeting the colonel at Battalion HQ. He calls you to gather around his command tank.

"The balloon's gone up, guys; the Soviets have broken through the border and are pushing on Fulda. I'm taking the Second and Third platoons with me to help out the 42nd at Fulda."

You wonder what you're supposed to do with your First Platoon. He lets you know soon. "Smith," he says, looking right at you, "First Platoon's got the real prime spot. You get to guard the fuel dump here at Schlitz. Ivan's gonna want to live off the land, and Brigade thinks they might send their empties over here to get refueled. You get to play fuel monitor and keep the Soviets from tanking up without paying for it."

That was yesterday. Today, the Captain was on the horn again. You could barely hear him through the mutual jamming by both sides.

"We've stopped 'em so far, but Recon says there's a bunch heading your way from all over. Keep 'em out of that fuel, and don't let any stray rounds get into that dump. We're going to need that diesel, too. I've got what's left of Able Company on its way to help, but we're not going to get there until an hour after they do.

"Keep Ivan busy for an hour and everything will be under control. I finally talked the colonel into moving the dump. Hang in there."

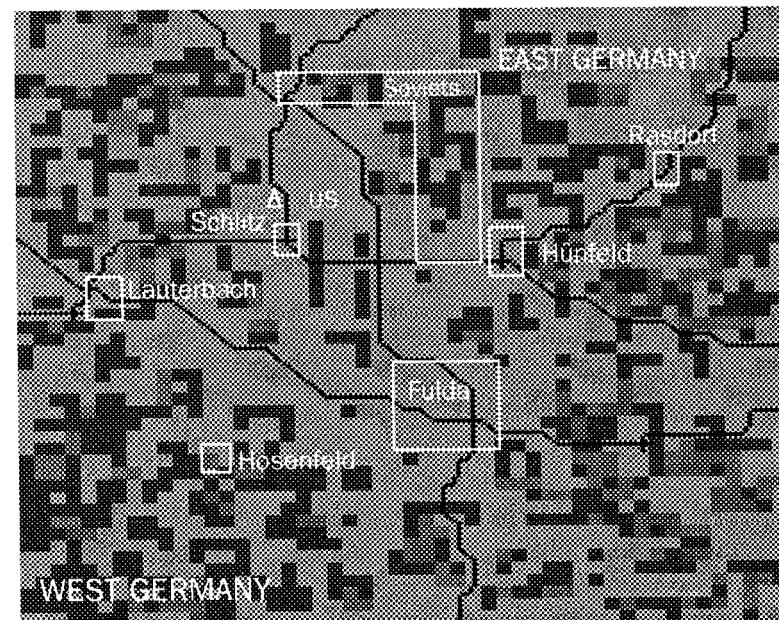


EUROPE: DEFENDER

S-4 RESOURCES: You have four M1A1s just to the north and east of Schlitz. You can resupply at the ammo dump.

S-2 REPORT: Recon reports four sections of tanks, one to three tanks in each section, mostly T-72s, all vectoring in on your position in an arc from your north to south-east. The section coming from the direct east should arrive first, the one from the northeast should arrive last.

S-I FITREP: Your FitRep will look better and better for every enemy vehicle destroyed. It will look very good if the fuel dump does not blow up. Your rating will go down for every tank you lose, every enemy tank in the area of the dump that has to be mopped up by the relief force, and there will be a big black mark if the fuel dump is destroyed.





EUROPE: ASGARD

MISSION NAME: ASGARD

MISSION AREA: GERMANY

S-3 BRIEFING: The mutual jamming has been tying up communications for the last three days. Artillery keeps taking out the phone lines the communications people set up. You've heard they're running out of wire. This may explain why your two platoons are the only armored to show up for the briefing from Brigade.

The Staff major looks nervous as first you, then an Air Force type and some joes from artillery come into the tent.

"As you are only too aware, communications are very bad on this front. Apparently, the Soviets have decided to do something about it by putting a communications station on top of the Wasserkuppe, the tallest mountain in the area. With a ground station there, they can blanket our communications and relay their own with impunity. We know this because we intend to do the same thing in a couple of days.

"I want you to intercept the Soviets with the forces available here. You have two platoons of tanks, a platoon of Vulcans and the services of some fire missions from the four batteries of M198 cannon set up at Fulda. There're also a couple of A-10s at Hosenfeld that we can vector in to help you.

"You'll be on your own. You have to hold this Russian attempt until they're all gone. If you destroy their combat vehicles, their engineers will not advance to construct the station. By the time they can assemble another team for this mission, our own station should be in place, with enough defenses to keep the Russians from shoving us out.

"Be careful out there."

Working with the FAC and FAO, you work out some frequencies that are fairly reliable, even with all the jamming. There are some other units with call on the artillery, so they can only provide sixteen fire missions.

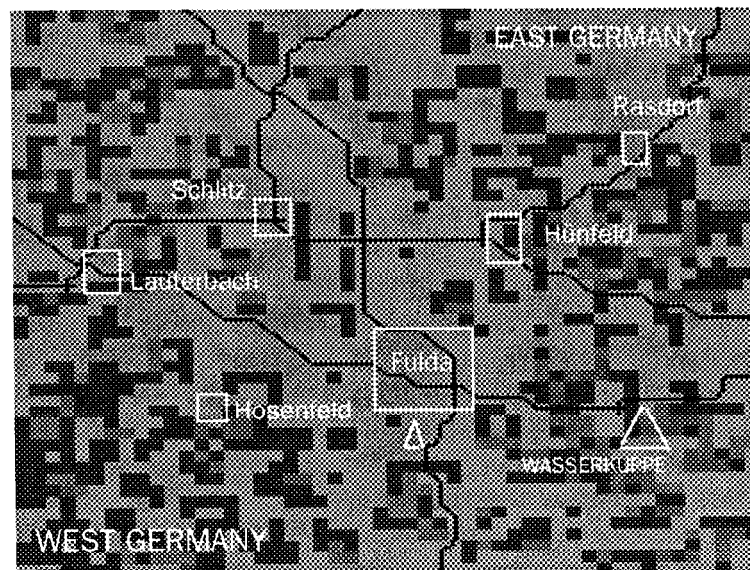


EUROPE: ASGARD

S-4 RESOURCES: You have one platoon of M1A1s in the eastern section of Fulda, and your other platoon is already positioned to the west of the Wasserkuppe. The Vulcan platoon is attaching itself to the platoon at Petersburg. There are four batteries to the south of Fulda that can let you have four missions each, and two A-10s waiting for orders at the airfield in Hosefeld. The supply depot is south of Fulda.

S-2 REPORT: The Soviets have some tanks of indeterminate type approaching the Wasserkuppe from the north and northwest. They can be assumed to have air support, and we have spotted some field artillery batteries digging in to the north of the Wasserkuppe.

S-1 FITREP: Your FitRep will be good if you destroy enemy vehicles and especially good if the enemy does not reach the Wasserkuppe area. Losing vehicles of your own will seriously impact your FitRep, and leaving enemy vehicles where they can accomplish their mission will do your FitRep no good at all.





EUROPE: VALKYRIE

MISSION NAME: VALKYRIE

MISSION AREA: GERMANY

S-3 BRIEFING: Things have settled down in the ruins of Schlitz. You've fought over it now three (or is it four?) times. The good burghers are going to have a lot of rebuilding to do when it's over. Your destroyed and damaged tanks have been replaced with brand new M1A2s. You're ready to move again.

But most of the action seems to have switched to the northern German plain. The call to come to a briefing is kind of a relief.

The briefing tent used to be a good tavern. Inside, Colonel Hacker is flanked by Major Hildebrant and an Air Force type. The colonel introduces Air Force Major Berkeley, who says, "Our Soviet friends got lucky and shot down a surveillance plane this morning. Unfortunately, that plane has a top secret 'black box' that we need to have back. We doubt that the Soviets know it is there, but if they got their hands on the box or the pilot, they would know immediately just how valuable it is.

"Thanks to your actions at the Wasserkuppe, we received a very good location report on the pilot, Capt. Gerald Davis, and the box. Unfortunately, he is behind enemy lines — such as they are.

"We want you men to break through, get the pilot and the box, and get back to Hosenfeld."

Colonel Hacker takes over the briefing. "We're sending in a small force because a large force would probably cause such a row that the pilot would get killed by a stray bullet somewhere. You have your two platoons of tanks, the platoon of Vulcans, and fire missions from three different batteries strung along the front. The Air Force has also promised us the use of four A-10s when you need them.

"Get going now. The longer that pilot is out there, the greater chance the Russians have him and that box."

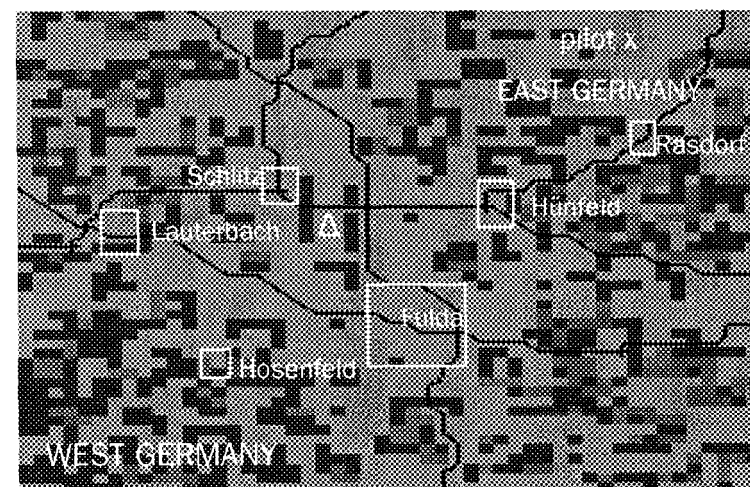


EUROPE: VALKYRIE

S-4 RESOURCES: You have four M1A1s and four M1A2s, with four Vulcans, to make the dash with. You have cover fire from the artillery batteries northwest of Schlitz, south of Schlitz and in Fulda. Each battery can supply four fire missions. A-10s are available to provide covering fire all the way. The supply depot is in the hills between Schlitz and Fulda.

S-2 REPORT: The Soviets have several platoons of armored vehicles in the area, though one unit may actually be Shilkas. There is a major Soviet artillery concentration around Hunfeld, and the Rasdorf airbase has several Frogfoots. We don't think the Soviets realize how important that pilot is, but they won't remain ignorant forever.

S-1 FITREP: You can increase your FitRep by destroying enemy vehicles, but it will look much better if you find the pilot and his box and get him back to Hosenfeld.



GAME PLAY NOTE — RESCUING THE PILOT: There is no room for a pilot in your tanks. Once you find him, direct a Vulcan to his position, then protect that Vulcan with everything you have.



EUROPE: BIFROST

MISSION NAME: BIFROST

MISSION AREA: GERMANY

S-3 BRIEFING: Suddenly, the war heated up again. As if retaliating for your incursion into their space in search of that pilot, the Soviets blitzed through Schlitz and brushed your company back to Lauterbach and Fulda. Most of the attackers pushed on deeper into West Germany and are now somebody else's problem. But there's still a company or so sitting on the airfield in Hosenfeld and they look like they intend to stay.

In a shell-torn warehouse in Fulda you look across the river at the Soviet platoon guarding that approach to Hosenfeld.

"We know they're going to want to expand that bridge-head," says Major Hildebrant, the S-2 who took over the battalion when Colonel Hacker bought the farm. "Brigade wants us to beat them to the punch while the 32nd is cutting off their friends' attack in the west. You've got the tanks and Vulcans here, plus most of our artillery. The boys with the M1A2s in Lauterbach- are ready to go on our signal and we still have two A-10s over there to help out.

"As far as we can tell, the Sovs are implaced but isolated; if you keep together, you can take them on piecemeal. Before they can react, you'll probably have destroyed half their tanks.

"We figure that it will take the 32nd about an hour to stop the attack and send them back this way. We want you in place in an hour to meet the retreating Soviets while they still think Hosenfeld is theirs.

"Take care of yourselves. They're waiting for something like this so you can't expect to catch them napping. Do as much damage as you can and drive them out of Hosenfeld. We want to have dinner tomorrow in the mayor's mansion — assuming it's still standing."

Great — Hildebrant is making dinner plans while your platoons have to make room for the dinner party.

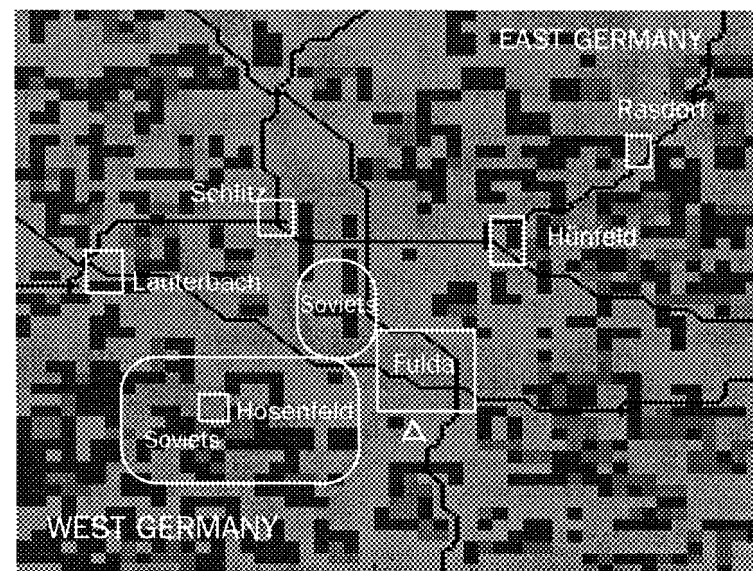


EUROPE: BIFROST

S-4 RESOURCES: You have eight M1A1s in Fulda and four M1A2s in Lauterbach. You've got four Vulcans with you in Fulda and two batteries with enough ammunition to give you four missions each. There are A-10s on call at the Lauterbach airbase. The supply depot is south of Fulda.

S-2 REPORT: The Soviets have approximately three platoons around Hosenfeld and artillery implaced inside, plus some other artillery emplaced to the south of Schlitz. They also have a supply convoy that just reached Hosenfeld. They have repaired enough of the airfield to land a couple of Frogfoots there, though the Frogfoots may be back in Rasdorf now.

S-1 FITREP: Your FitRep will benefit by getting your vehicles into Hosenfeld and, incidentally, destroying enemy vehicles. Try to keep your own casualties down to a minimum.





EUROPE: WILD HUNT

MISSION NAME: WILD HUNT

MISSION AREA: GERMANY

S-3 BRIEFING: As Hosenfeld burned around you, you could hear the roar of approaching vehicles. You barely had time to scramble into your tank and dog down the hatches before the first wave of retreating Soviets hit the town. They did not find the safe haven they expected, but you had not quite garrisoned the town to stop this avalanche of vehicles. You pick off what you can as they pass through and monitor other tanks, aircraft and reconnaissance planes as they report this mass retreat.

As the last of the retreating Soviets breaks past your position, a Bradley IFV pulls up and Major Hildebrandt pops out of the hatch. "How many tanks you got left, Captain?"

"Four," you answer. The toll has been heavy. A lot of friends won't be coming to the post-war reunion.

"Well, you're the senior surviving field officer here so you get to chase Ivan home. I've got a platoon of A1s and a platoon of A2s for you from Brigade and some Vulcans to fill out your AA platoon. There're four A-10s waiting for your call and here are the call numbers for three batteries that can answer any call within reason. Get after those retreating Soviets and maul them the best you can. Watch out for their artillery and air cover, but chase them to Hunfeld if you have to. You can keep going to Rasdorf if you want, but don't unless you think you can come back."

You realize that your tanks are low in ammunition, but you have enough to do some damage. Besides, all the first class Russian armor is long gone, anyway. All you have to chase are a bunch of cripples — plus any covering force they've left behind. You also need to watch out for Soviet artillery pockets. They like to set up killing grounds where they can concentrate all their artillery.

Getting the locations of the other tanks and artillery, you turn your battered tank around and head north. You can still see the dust trail of the retreating Soviets...



EUROPE: WILD HUNT

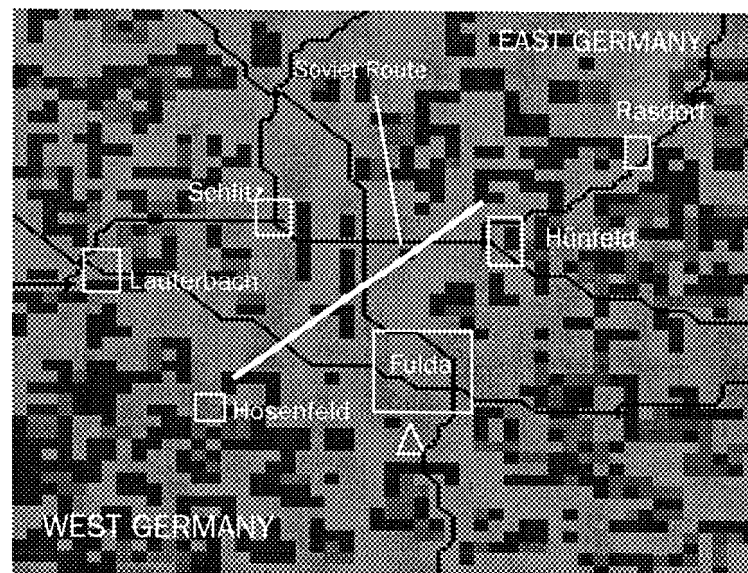
S-4 RESOURCES: You have a platoon of M1A1s that are somewhat damaged and short on ammunition. You also have another relatively fresh platoon of M1A1s and a fairly fresh platoon of M1A2s, as well as a platoon of Vulcans.

There are A-10s waiting for a call at Hosenfeld, and three artillery units, two at Fulda and one on the Lauterbach road with a total of 13 missions before they run out of ammunition. The only supply depot is south of Fulda.

S-2 REPORT: Recon says that the closest Soviet forces consist of a mixed group of somewhat damaged T-72s and T-80s and a unit of Shilkas, the AA vehicle. There are also Frogfoots known to be operating in the area and masses of Soviet artillery around Rasdorf and Hunfeld.

Watch out. The Soviets may try an ambush to delay you.

S-1 FITREP: Your FitRep will improve with every enemy vehicle destroyed, and decrease with every friendly vehicle destroyed.





MIDDLE EAST: ASS'S JAWBONE

MISSION NAME: THE ASS'S JAWBONE

MISSION AREA: MIDDLE EAST

S-3 BRIEFING: How did it get started? How did Syria and Israel actually come to a real shooting war over Lebanon? And, even given America's traditional ties to Israel, how did your brigade of American GIs find itself supporting Israel by guarding a town with the unlikely name of Bent Jbail on the Lebanese-Israeli border?

Well, that's a question for later. Right now, it's time to slug down another cup of coffee and pay attention to what Major Swinburn has to say.

"A column of Syrian tanks is approaching along the road to Sour." At your blank look he explains, "That's Tyre on some of your maps.

"Recon shows us that you are greatly outnumbered even with your attached Vulcan platoon, so we are seconding the 3rd platoon from across the border to you. They should get here about the time the lead elements of the Syrian force do.

"You're outnumbered but you have artillery support here, and the 3rd platoon can call on another battery from across the river. They're short on ammo so make the best use you can of their limited fire missions.

"You also have two A-10s from Zefat on call.

"We can get more reinforcements to you about a half hour after the Syrians get here. Try to hold them until then. Any questions?"

"Do they have any air cover?" asks Jack Davis, the second looney in charge of the two-vehicle Vulcan platoon.

"Yes, they've been using some Frogfoots to clear out opposition ahead of them. We don't know if they have enough staying power to remain with the tanks until they get here."

You look up and see the distinctive silhouette of a Frogfoot over the town. "I think we just got the answer to that question."



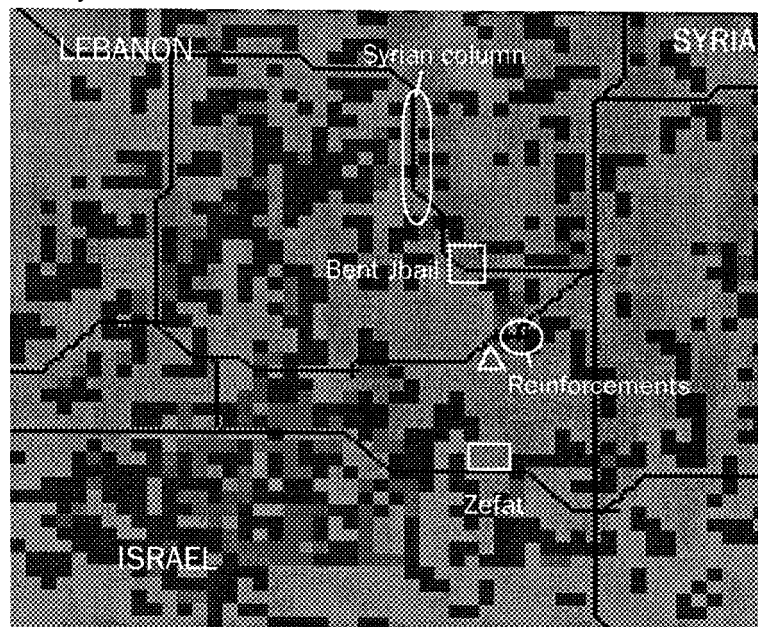
MIDDLE EAST: ASS'S JAWBONE

S-4 RESOURCES: You have four M1A1s and two Vulcans laagered just to the west of Bent Jbail, directly on the road the Syrians are coming down. The four M1A1s of the 3rd Platoon are on their way. In the town is a battery of M198 155mm howitzers and there is another battery across the border, in range of the town. There is a supply depot near the 3rd Platoon's position.

Two A-10s are loaded and ready to go any time you ask for them from the forward airbase at Zefat.

S-2 REPORT: There are about four platoons coming down the road. Recon shows at least four T-80s and four T-72s moving in echelon over a line of about 5 kilometers. As many as two Frogfoots may be preceding them to soften up any opposition. No artillery or infantry support has been noted.

S-1 FITREP: Your FitRep rating will improve with every enemy vehicle destroyed and decline with any of your units destroyed. You will be in deep trouble if there are any enemy units inside Bent Jbail at the end of half an hour.





MIDDLE EAST: GOD'S LAST ACRE

MISSION NAME: GOD'S LAST ACRE

MISSION AREA: MIDDLE EAST

S-3 BRIEFING: "They're coming again," says Swinburn. "This time, we can't depend on the cavalry to help us out. The incursion around Tiberias has bled off any possible reinforcements until tomorrow.

"They're coming down both main roads this time; they're bringing along infantry so they must intend to stay awhile."

He looks over his notes and continues, "Recon also shows that they've established artillery along both their routes, so we can expect counter-battery fire.

"Brigade says that if we destroy their infantry they'll probably pull back; the trucks should be the first targets."

"What do we have going for us?" you ask.

"Well, we still have Vulcans so we have a weapon against their close air support."

"Close air support?"

"Didn't I mention it? They've got a couple of Frogfoots flying air cover over the trucks."

"Do we have any air cover?"

"Oh yeah, those A-10 Warthog jockeys in Zefat are still on call if we need them."

You look at your tank laager and wonder just how you're supposed to defend this little chunk of Lebanese real estate with four M1A1s and the four old MIs Brigade sent to replace your damage from the last fight. They must be raiding all the old National Guard and Army Reserve armories for anything that'll fight and shipping it over on the next tramp steamer. At least you have your artillery where you can use it (until they run out of ammo) and some Vulcans to keep the Frogfoots off your back. It might be enough.

Let's see, the western column will get here first. Should you go out to meet it or wait in ambush in the town?

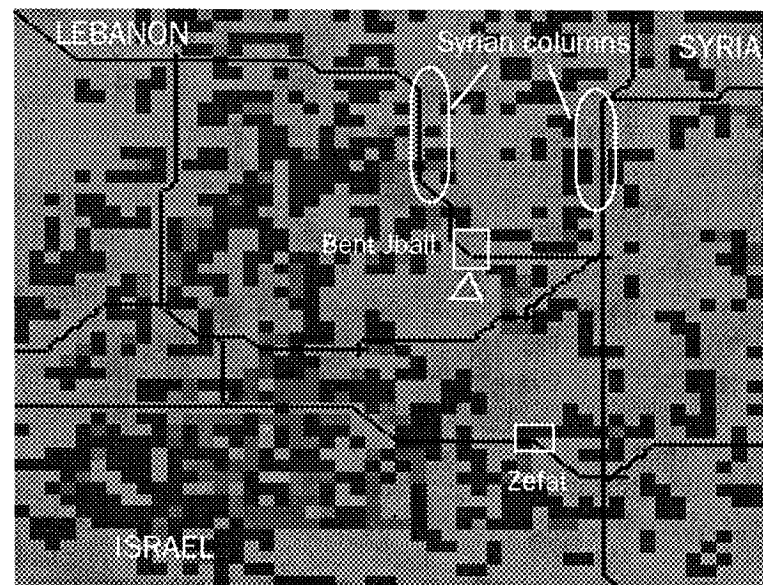


MIDDLE EAST: GOD'S LAST ACRE

S-4 RESOURCES: You have two A-10s on call in Zefat, one platoon of four M1A1s and one platoon of four MIs and the short platoon of two Vulcans. Your 155mm artillery have four fire missions each, then they're out of ammo. A supply depot for your tanks is south of town.

S-2 REPORT: Recon shows a platoon of T-80s and a platoon of T-72s with each convoy of four trucks. Each convoy also has an accompanying Frogfoot. The columns slowed up long enough to detach a battery of D-30 122mm howitzers with just enough range to hit the town.

S-1 FITREP: Your FitRep will improve with every enemy vehicle destroyed and decline with every unit you lose. At all costs you must keep the enemy out of Bent Jbail.





MIDDLE EAST: EXPULSION

MISSION NAME: EXPULSION

MISSION AREA: MIDDLE EAST

S-3 BRIEFING: You look at the ruined town of Bent Jbail through your binoculars. The frustration gnaws at your gut. After three days of trying to hold on to the little burg, you've been tossed out. Even the last minute addition of another tank company couldn't stop the Syrian tanks. Now your back is against the border, and the Syrians are bringing in a whole new company of bright and shiny tanks.

"Not very pretty, is it?" asks Swinburn as he comes up behind you. You resist the urge to turn and scream at him. It's not his fault that Brigade kept telling you to hold this Jehovah-forsaken town beyond any reasonable need.

"Now what?" you ask.

"Now we bug out, of course." He looks as tired as you feel. While you've been fighting for the lives of you and your men, he's been trying to keep you alive with Brigade. You wonder who's been through the worse battles.

"Brigade wants us back at Zefat. They've got enough artillery there to keep the Syrians off our backs. Pull out as soon as you can. And don't look back."

"What about those field guns? We don't have any vehicles to haul them with."

"The crews will fire them to cover the retreat. When they're going to be overrun, they blow 'em up and run."

He pauses, probably thinking about the gunners that are going to have to become guerillas or refugees to stay alive. "We've got some more A-10s at Zefat, too. There'll be four flyboys covering us as we go."

He leaves you to plan your tactics. You know the remaining artillery battery has about three missions worth of ammo; should they be protected until they can get those rounds off? All of your tanks have some damage. Which ones should be pulled out first? Can you turn this disaster into a setback?



MIDDLE EAST: EXPULSION

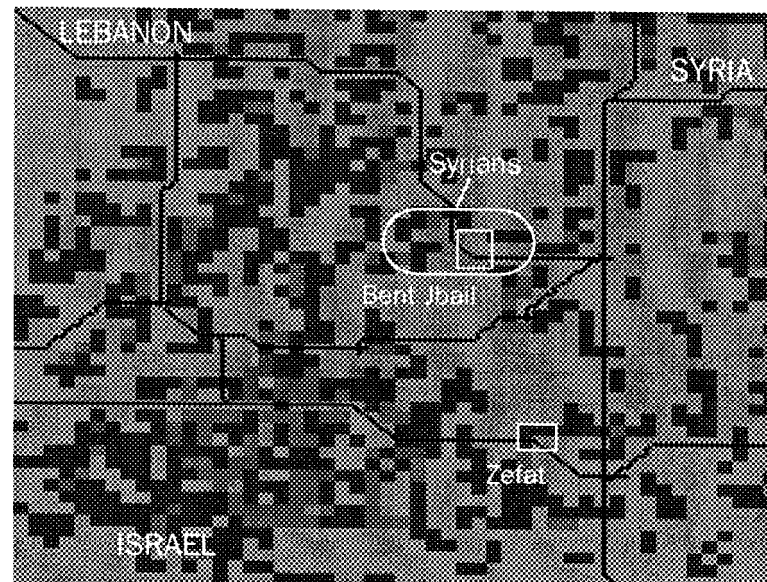
S-4 RESOURCES: You have a platoon of three M1A1 tanks with some damage, a platoon of four M1A1s with damage, and a platoon of three M1s with damage. Your Vulcan platoon now has one M163 in it. The rest are burning hulks in Bent Jbail.

You have one battery of 155mm howitzers with three fire missions left and no way to move them. The three batteries emplaced at Zefat can just barely reach you, but they have several missions each available to you.

There are A-10s ready to go at Zefat. No supply depot is available.

S-2 REPORT: The Syrians have T-72s and T-80s in and around Bent Jbail. They have two artillery batteries behind their tank lines, one on each road. They still seem to have access to some Frogfoots.

S-1 FITREP: Your FitRep will be increased with every enemy vehicle destroyed, but increased more for every vehicle you get to Zefat. It decreases with every vehicle lost.





MIDDLE EAST: BLOW THE HORNS

MISSION NAME: BLOW THE HORNS

MISSION AREA: MIDDLE EAST

S-3 BRIEFING: "It don't rain but it pours," as Grandpa always says. Except that rain is in pretty short supply in Israel. But the Syrians seem to be pouring into the country enough to make rain superfluous.

You stand on your tank turret and scan the horizon, which is broken up by the ruined buildings of Zefat. With barely enough tanks to make up one platoon and one artillery battery, you have to hold the town against a company of Syrian tanks with artillery backup.

"Report from Brigade, sir." says one of your other tank commanders. "They say relief is on the way. We have to be ready to break out in 20 minutes to join their attack on the airfield."

About time. You wonder what the commander of the relieving force is thinking.. .
* * * * *

As your M1A2 rolls off the, main road and heads for the airfield, you wonder how the troops in Zefat are holding up. You remember the briefing you got before you rolled out of the staging area.

"The troops in Zefat are barely holding on. You've got two platoons of M1A2s, a platoon of Vulcans for air cover and a battery of 155s to supplement the artillery in town. The Air Force is supplying two A-10s with another two on the way. The Syrians have most of a company of tanks encircling the town and several artillery batteries, but they must be getting low on munitions. They also have a couple of Frogfoots they've planted at the Zefat airbase;

"Take the airbase with the aid of the troops in Zefat then try to take the town again if you have the force available. You have a half hour from when you approach the base. Good luck."

You check your watch. The half hour starts now.



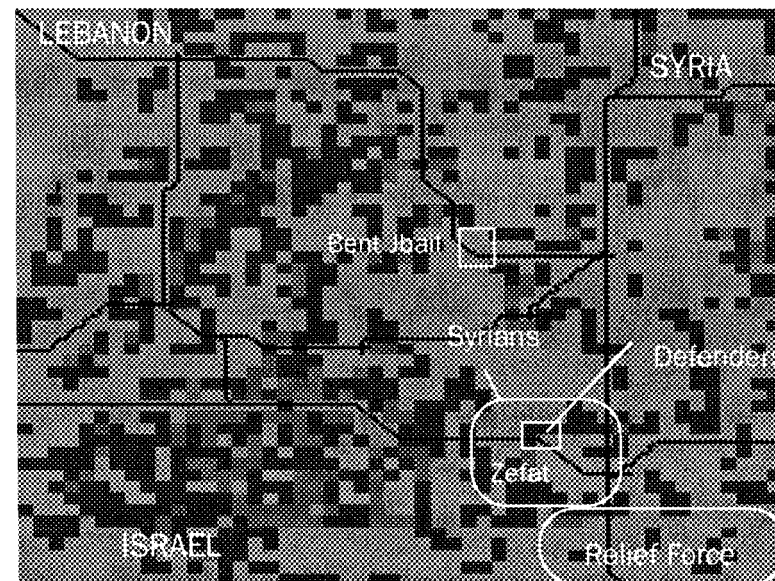
MIDDLE EAST: BLOW THE HORNS

S-4 RESOURCES: You have three M1A1s in Zefat, along with one battery with three fire missions.

The relieving force consists of two platoons of M1A2s, one platoon of M163 Vulcans, one battery of 155s with four fire missions, and two A-10s in the air, poised to strike on request. No supply depots are available.

S-2 REPORT: The Syrians have several T-72s and T-80s surrounding Zefat. They have three artillery batteries to the north of the town and have landed some Frogfoots in the airfield outside of Zefat.

S-1 FITREP: Your FitRep increases with every enemy vehicle destroyed and even more with every friendly vehicle inside Zefat at the end of a half hour. It decreases with the destruction of friendly vehicles and enemy vehicles left outside or inside Zefat at the end of the half hour.





MIDDLE EAST: ARMAGEDDON

MISSION NAME: ARMAGEDDON

MISSION AREA: MIDDLE EAST

S-3 BRIEFING: At last you're looking at the cratered rooftops and streets of Bent Jbail through your binoculars again. But now you feel you've got a fighting chance. Strung out around the town are the remnants of the crew you chased out of Zefat yesterday. Strung out in a line along the border is the company-strength conglomeration of tanks and AA vehicles that are left after you removed the Syrians from Zefat and chased them back to Lebanon.

The briefing from the new CO, Colonel Hawkings, had been brief and to the point.

"I think we all agree that we're tired of being knocked around. The Syrians are over there in Lebanon — probably gathering for another attack. We're going to attack first. Take your company across the border and hit the Syrians. Keep on hitting them until there aren't any Syrians left." A man of few words, that Colonel Hawkings.

You can see a Frogfoot wheeling above the town. The Syrians still have air cover from their airfield in Syria. Their artillery is still around, too, as you can tell from gun flashes and the occasional shells falling in your formation. But they aren't shooting much -they must be running low on ordnance.

On the other hand, your batteries are fairly fresh. Four collections of 155mms are ready to go. Ammunition is still scarce, but you can get four missions out of each. That should be enough.

You know that the Syrians now have some Shilka AAs. The Air Force learned that the hard way. That makes the Air Force's job a little harder, but not impossible. The two A-10s should have lots of targets today.

This will be the first chance you have had to meet those Russian tanks with equal numbers. It will be a whole new shooting match today.



MIDDLE EAST: ARMAGEDDON

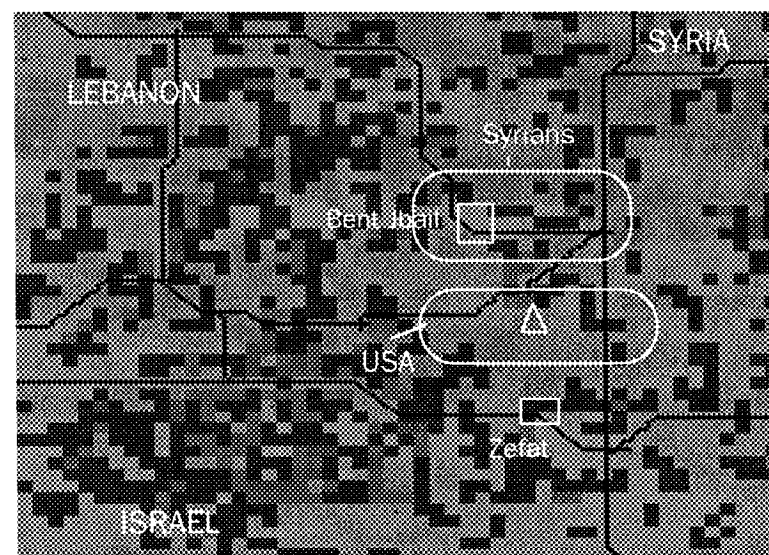
S-4 RESOURCES: You have one platoon of four M1A1s, one platoon of four M1A2s and one platoon of four MIs. Supplementing these is an AA platoon of four M163 Vulcans.

Your four artillery batteries can provide four missions each and you have A-10s at Zefat ready to come when you call. A supply depot has been set up south of Bent Jbail.

S-2 REPORT: The enemy has about a dozen tanks, an undetermined mixture of T-80s and T-72s. The airfield in Syria seems to have endless pairs of Frogfoots.

For artillery they have two batteries of 122mm guns which Recon says were just resupplied. They also have an AA platoon of the very effective Shilka vehicles.

S-1 FITREP: Your FitRep will increase for every enemy vehicle destroyed and every vehicle you have in Bent Jbail or its vicinity at the end of the engagement. You lose FitRep for the destruction of your own vehicles and every enemy vehicle still in Bent Jbail or its surrounding territory at the end of the engagement.



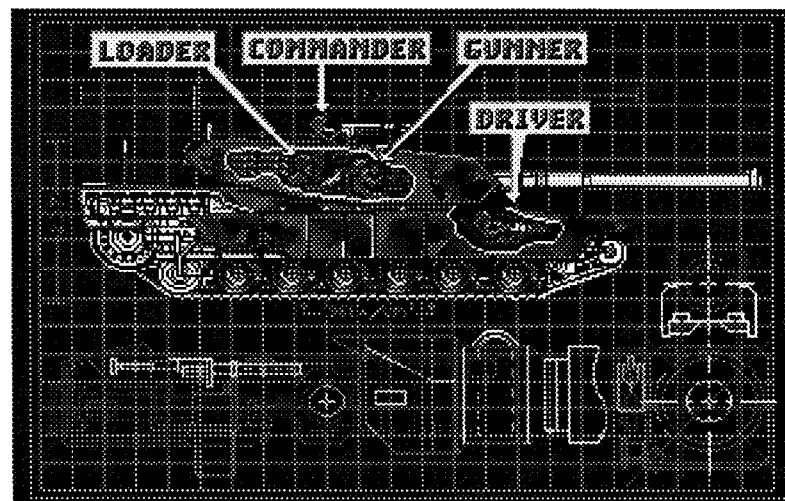
IV. PLAYING HINTS

PLAYING HINTS



PLAYING HINTS

The following information is meant to help any tank commander: both the commander of armored units and the commander of a single tank. The first section deals with tank tactics and general operational information for dealing with a tank battalion or platoon. The other pages deal with the difficulties of fighting various opponents the individual tank will have to deal with on the modern battlefield.





UNIT TACTICS

Unit Tactics

1. *Form maneuver teams.* US Army doctrine calls for dividing a four tank platoon into two maneuver teams of two tanks each. The teams support one another just as the tanks in the teams support each other. The best way to duplicate this in the game is to use the Detach function of the Move Menu and divide your platoons into one two-tank team and one team of two detached tanks that you will have to move separately. Then keep the teams together by their orders on the Mission Area Map (Operational Level); in the Individual Game, skip back and forth between the "platoons" and make sure they continue to work together.
2. *Leapfrog your movements.* When crossing terrain with a possible enemy presence, one team should wait while the other team makes the crossing; then the crossing team should stand guard while their backup makes the crossing.
3. *Keep a reserve.* Whenever possible keep a platoon or maneuver team in a position to come to the aid of any unit. There are two doctrines as to who should be aided in offense. The Russian doctrine says that the reserve should be committed to support a successful unit in order to exploit its success. The alternate doctrine, which has some adherents in Western tactical thinking, is that failing attacks should be supported by the reserve, in hopes of turning them into successful attacks.

In defense, of course, the reserve should be used to support any unit that is crumbling in the face of the enemy's attack.



TANK VS. TANK

Individual Combat Hints

When fighting one-on-one against another tank, keep the following in mind.

1. *Shoot for the vulnerable areas.* All tanks have less armor on their sides and back than on their front and turret.
2. *Keep moving.* One of the Abrams's advantages is its stabilized gun and laser sight. You can fire on the move with normal chances of hitting. Some enemy tanks have to stop to have a decent chance of hitting. Hit those tanks before they can get into position.
3. *Find a hull-down position.* If you have to take a stationary defensive position, set yourself on the side of a ridge opposite to the probable direction of the enemy advance if you can. Your ability to do this will depend on the degree of slope, since the game does not provide Army Engineers to dig out positions for your tanks. In an ideal situation, the driver should not be able to see the oncoming enemy, but the gunner should. This is called a "hulldown position," and it means that the enemy has only the small target of your turret to shoot at, rather than the whole tank.
4. *Enfilade.* Whenever possible assume a position where you can shoot at the sides of a whole line of tanks. With luck, you can take out three or four before they realize where the shots are coming from.
5. *Use of cover.* There is a temptation to hide behind trees and houses to surprise an enemy. Do not do this in the middle of a fight. The enemy has thermal imaging weapons, and they will pick you out of cover easily. However, using the wrecks of burning tanks as cover will work, as the heat generated by the fires should cover your own heat signature.
6. *Defensive/y, remember your formation.* Make sure the other tanks in the platoon are in good defensive positions, and change your formation if that will give the other tanks better cover.



TANKS VS. TANK AND AIRCRAFT

The Best Anti-Tank Ammunition

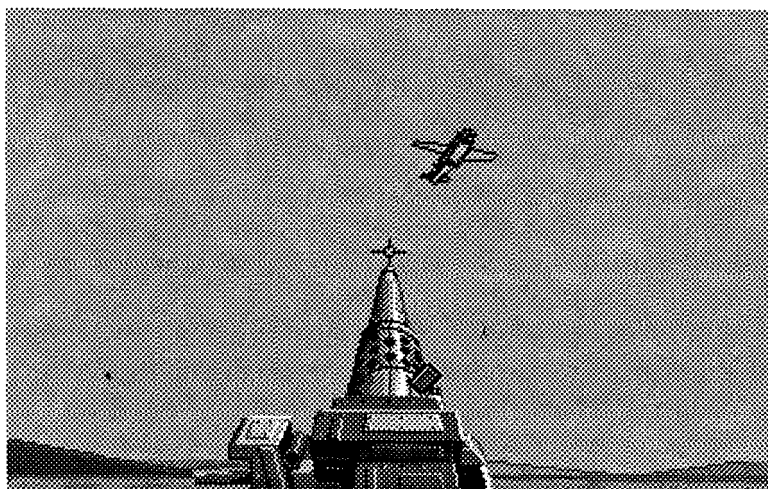
Use Sabot rounds versus the T-80, as it is protected against the HEAT. Versus the T-72, HEAT rounds may be successful, depending on the degree of protection the T-72 has been modernized to.

Aim for the sides and back if at all possible and, conversely, don't let the enemy get to your side or back. Never use HEAT rounds on the target's front or turret of a tank.

Versus Aircraft

Tank main gun rounds are not meant for shooting at aircraft. A hovering helicopter might be a candidate for a HEAT round — but never shoot at a jet with a tank cannon.

Instead, use the coaxial machine gun and the Commander's cupola machine gun on airborne targets.



TANKS VS. INFANTRY

Infantry Weapons

In the Yom Kippur war, Egyptian-manned, Russian-made Sagger ATGWs (Anti-Tank Guided Weapons) did a surprising amount of damage to Israeli tanks. Ever since, critics of armored warfare have claimed that the tank is obsolete; an infantryman with an anti-tank rocket could stop any tank.

While obituaries for the tank are a bit premature, the properly equipped infantryman can still pose a major problem for the tanker.

ATGW (Anti-Tank Guided Weapons) Rockets

These weapons have grown more and more sophisticated and more and more dangerous to the modern tank. However, most of these weapons use HEAT rounds exclusively because they cannot generate the velocity necessary for an effective Sabot round. This means the M1's Chobham armor is particularly effective against it. These weapons are

all sight-guided and their main advantage is their superior range to a tank cannon. However, it takes several



seconds for a rocket to travel two miles to its target. The gunner must stay glued to his sight and keep his target in that sight the entire time, or the rocket will miss.

A tactic devised by Israeli tankers during the Yom Kippur war is simply to look for the telltale puffs of rocket smoke and, whenever you see the puff, duck behind a tree or building to foul up the gunner's aim. The other, more aggressive, tactic is to shoot at the puff of smoke and hope that incoming tank rounds will make the gunner flinch and take his eyes away from the sight, leaving the ATGW without direction.



TANKS VS. INFANTRY

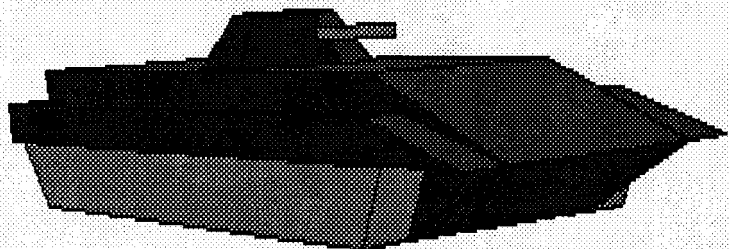
IFVs (Infantry Fighting Vehicles)

Infantry Fighting Vehicles come in two varieties from the viewpoint of the tanker. One form carries troops and mounts a low-power anti-tank gun that is not much of a threat to an MI. The other form acts as an infantry support anti-tank vehicle and carries anti-tank rockets such as those described above.

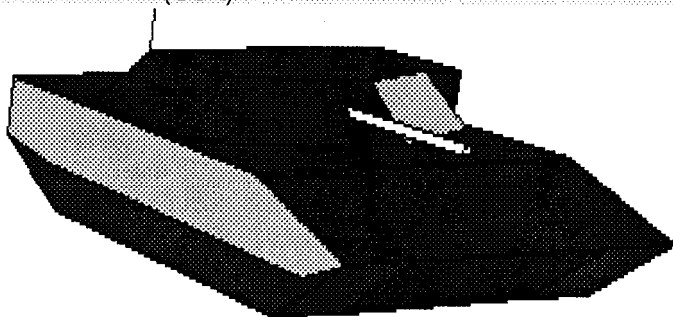
In this latter form such vehicles are a great danger to the tank and must be disposed of immediately. Fortunately, they cannot fire on the move. A moving IFV is no real danger, but a stationary one may be lining up its sights on your tank. Blow it away immediately.

To fulfill your mission you may need to make targets of other IFVs, such as those carrying troops toward the area you are defending; but remember to destroy any enemy IFV that has stayed in the same place too long.

BMP-2 IFV (USSR)



M-2 BRADLEY IFV (USA)



TROUBLE SHOOTING

Self-Help Trouble-shooting

Shooting Problems — Leading The Target

Keep in mind that most of the opponents worth shooting at are on the move. Unless your target is moving directly toward or away from you (or are landscape fixtures, such as a house or telephone pole), it is unlikely to remain where you shot at it.

Lead your targets, aiming for where you think they will be when the shell hits. The faster they are moving and the further away they are, the more you must lead them.

This applies mostly to the coaxial machine gun and the Commander's machine gun. With the tank's main gun, this is alleviated by using the laser sight as described in the section on the Gunner. If the laser sight is knocked out, lead your target as described above.

Reality Problems

We have tried to make this the most realistic tank simulation ever created. However, we have fallen short of reality. This lack of reality is simply a function of memory available to the computer. Every picture takes up space and causes delay when it is brought up for the game. Saving space and time by eliminating some possible pictures creates an inexact match between game and reality. Your computer cannot simulate the real actions of the 20+ people it is trying to simulate. Computer terrain cannot duplicate every gully and road bump on a German road or even every village on a German map. We have tried to duplicate all the aspects that make the game an exciting one, while editing out the aspects that can make a real battle both boring and too uncertain.

For the same reasons, many actions available in reality are not available to a game tank. For instance, a real tank has a good chance of knocking over any house, tree or telephone pole it runs into. In this game, you have to go around these obstacles.



Training, the Antidote to General Confusion

Trying to keep track of a multi-tank battle is very difficult. Make the most of your Outside, Trailer and Recon screens; memorize what you can do with the Outside screen and what you need to go into the Commander, Gunner or Driver screens for. Remember that your Commander's Machine Gun screen gives you the biggest picture and provides a compass bearing on any target you see.

Play and re-play the Sudden Death and Doom Race missions until you have a good grasp of what you need to keep in your mind. Get used to being shot at and, in the Doom Race mission, to keep track of more than one vehicle. It will take you several missions before you learn how to keep your head when everyone about you is losing theirs.

Unless you are positive you have learned all there is to know in the Fort Knox missions, start off as a Beginner in every mission you try. You may think you have learned all about tank warfare with the training missions and want to start off the European missions at the Intermediate level. However, you'll find the unique terrain and problems of European or Middle Eastern combat will fool you unless you start off as a Beginner, just as any tanker rotated to a European station must do in the yearly wargames held there. Think of yourself as a new recruit who must go through the wargames before you find yourself confronting the real thing.

V. APPENDICES



HISTORY OF ARMORED WARFARE

A. History of Armored Warfare

The first armored fighting vehicles

Mobile, armored, fighting platforms that mounted artillery were first developed in the 15th century by John Ziska, a leader of the Hussite rebellion in Bohemia. The Hussites followed the teachings of John Hus, a priest who took up the views of Martin Luther. Hus was executed by King Sigismund of Bohemia, but his followers formed a religious sect that rebelled against the oppressive Bohemian king and the Holy Roman Empire, whose Catholic inclinations did not tolerate divergent religious views.

The Holy Roman Empire had lots of knights and heavy cavalry. The Hussites had some minor nobles among their adherents, but most were peasants. They could not match the nobility and mercenaries sent against them man-to-man.

However, John Ziska was a canny old soldier. He hit on the idea of turning wagons into travelling forts by lining them with metal and mounting cannon and crossbowmen (and, later, musketeers) on them. They were called "Wagenburgs" or wagon forts. The Hussite "armored teams" were highly mobile and brought far more firepower into a fight than the knights and mercenaries could. The Hussites protected themselves for decades before Ziska's death and internal politics within the sect left them open to conquest by Sigismund's successors.

The final defeat of the Hussite cause and the lack of communication between middle and western Europe kept this departure from basic medieval tactics out of the repertoire of most armies throughout the 16th-19th centuries. Settlers of the American West are rumored to have used more makeshift versions in their occasional skirmishes with the American Indians, but they rarely mounted artillery on wagons.

The 19th century did see the development of armored warships, a major departure from the traditional wooden



THE FIRST TANKS

ship. Perhaps this form of innovation, which helped make the British Navy paramount in the world, sparked a response in the British military.

Mobile Artillery

However, one lesson learned in the intervening years was the need to have highly mobile artillery support. Until the invention of the automobile, this was supplied by horse artillery: light field pieces pulled by horses which accompanied the cavalry and lent support to their attacks and covered their retreats.

Once automobiles were invented, military tinkers attempted to produce a motorcar equivalent of a horse artillery battery, but they found that automobiles lacked the crosscountry ability found in the steady artillery horse. By the time of the First World War, the only way to get artillery moving was still with the old reliable horse.

Then the advent of the trench/machine gun combination put a stop to the movement of artillery or the movement of cavalry. War came to a standstill as trenches appeared from one end of France to the other.

Something was needed to break the stalemate — something that would have the mobility of cavalry and horse artillery, the firepower of a horse artillery piece, and the protective qualities of a trench. The generals needed a fighting vehicle with armor.

The First "Tanks"

The first Armored Fighting Vehicle recognizable as a tank was developed by British Lieutenant-Colonel Earnest D. Swinton in 1916. He adapted the design of armored cars (relatively useless off a road) to the use of tracks such as those on some American farm tractors. To keep German spies from realizing what the machines were, they were labelled "tanks" to make them sound like water carriers to be used in the desert; the name stuck.

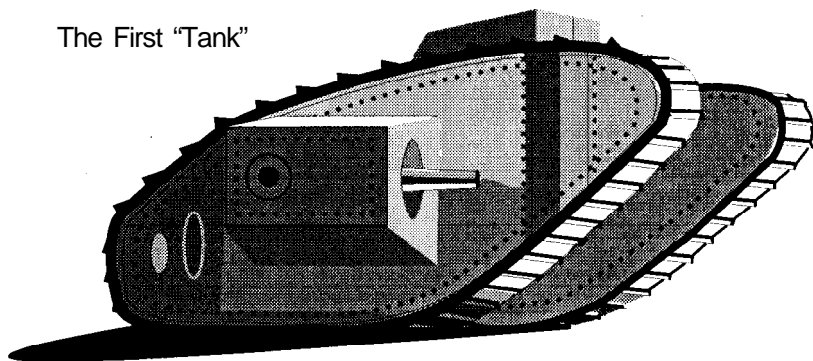
These tanks were first used on September 15, 1916. A German officer captured in that attack described the use of



AMERICAN TANK DEVELOPMENT

the tanks as "Not war, but bloody butchery." The Chief of Staff of the German Third Army wrote, "The enemy . . . have employed new engines of war, as cruel as they are effective. No doubt they will adopt on an extensive scale these monstrous engines, and it is urgent to take whatever methods are possible to counteract them."

The First "Tank"



Theory about the use of the first tanks divided them into two types whose descendants are still with us today. The lightweight "whippets" were meant to surge through enemy lines and roam freely, using their machine guns to raise havoc and cut supply lines. The larger tanks (called "Infantry tanks" by the British) were meant to lead assaults on trenches, using their heavier artillery to destroy enemy positions and support advancing infantry.

When the Germans tried to match these tanks with their own vehicles, they followed much the same design lines.

Essentially, these have been the two major roles of tanks up to the present day.

The Development of American Tanks

In the First World War, the American army used French and British tanks. Between the wars, they toyed with various styles of tanks, swinging back and forth between the heavily armored infantry support vehicle and the lightly



AMERICAN TANK DEVELOPMENT

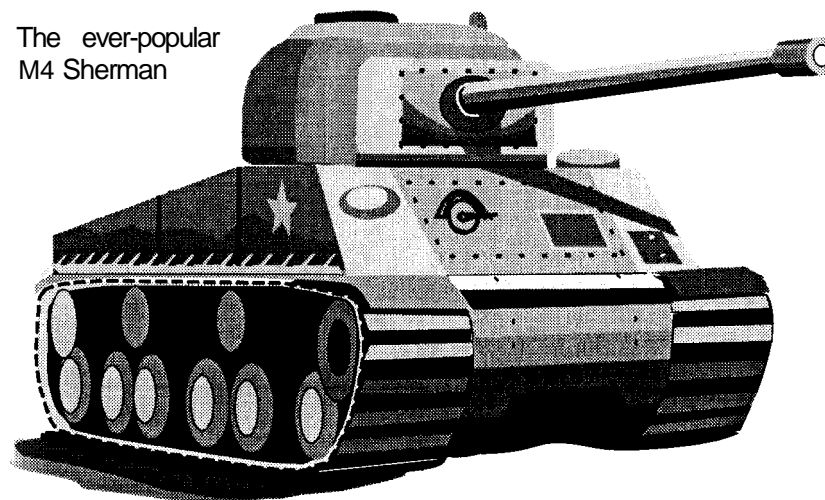
armored independent tank that operated like a cavalry troop. The main innovation in American design was the use of radical aircraft engines, which supplied more power than conventional engines but caused the tank design to incorporate high rear ends.

The first successful design along these lines was the M2 Light Tank, mounting a 47mm gun in the turret. These were supplied to the British army in North Africa and immediately picked up the nickname of "Honey" because of their excellent handling characteristics. Unfortunately, their main gun did not have sufficient power to penetrate the frontal armor of the German Panzer IV, Rommel's main line tank.

The M2 was quickly followed by the M3 "General Lee," which mounted the same 47mm turret but also carried a 75mm gun in a side-mounted sponson. One of these tanks was a featured player in the little-known Humphrey Bogart wartime film, **Sahara**.

The "General Lee" was followed by the M4 "General Sherman," which carried the 75mm gun in the turret. Compared to its opposite numbers in the German army, it was an easy target and light-skinned, but it was easy to

The ever-popular
M4 Sherman





TANK DESIGN THEORY

build and easy to maintain. It proved so popular that it was bought by many countries after the war and was in production for several years after the war.

The M4 was followed by the M26 "Pershing," then the M48 and M60 "Pattons," which were arguably just extensions of the M4 design. The M60 did make the departure of using a diesel engine similar to those in use elsewhere in the world instead of the aircraft-style engines used before.

Armored Vehicle Design Theory

Modern tank design has reached a stage where the three main considerations of designing armored vehicles — guns, armor and speed — can be balanced so that a vehicle has adequate amounts of all three. American tank design has generally concentrated on mobility and ease of handling and maintenance, which resulted in mechanically excellent tanks that were deficient in armor and weaponry, such as the M2, M3 and M4. Now these deficiencies have been eliminated and the American military has the M1 Abrams, a tank with protection and firepower to equal any other tank design, on a chassis that is much easier to run and maintain than most.

Whatever Happened To The Heavy Tank?

During the Second World War, tanks were divided into three classes: heavy, medium, and light. The heavy tank was considered too unwieldy and was eventually abandoned for the medium tank, now called the Main Battle Tank (or MBT). This category describes tanks that weigh more and are heavier armed than the discarded heavies of WWII, though they still have the maneuverability of the medium tanks.

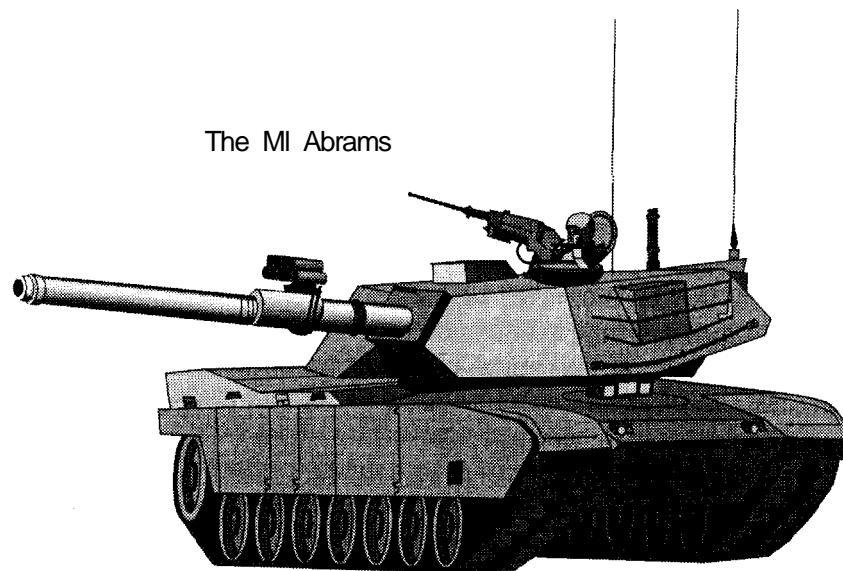
THE M1 ABRAMS



Creation of the M1/M1A1 Abrams

The biggest battle the M1 has seen so far in its career was the struggle with Congress to approve its design and production. Costconscious Congressmen were afraid that the tank was a deathtrap and an unnecessary elaboration of the M60. It is said the testimony that convinced Congress otherwise was not that of the generals and Defense Department experts who argued that an upgrade was necessary to meet the challenge of Warsaw Pact improvements, but that of the tank sergeants who operated the test models and realized how much of an improvement the M1 is over its predecessors. Their testimony was very persuasive; most Congressmen were convinced and the M1 has enjoyed the support of Congress ever since. In fact, Congress ended up appropriating money for more M1s than the Pentagon had requested.

The M1 Abrams





NATO Armored Vehicle Design Theory

Current American/NATO theory is that the quality of NATO tanks must offset the numerical superiority of the Warsaw Pact tanks. NATO military strategy is based on the assumption that one NATO tank is equal to at least two of their Warsaw Pact opposite numbers.

While no one considers a Soviet tank equal to its NATO opposite number in one-on-one combat, military observers are much less convinced that NATO tanks are equal to two of their opposite numbers. There is still a qualitative difference between the M1A1 and the T-80, but it is less than that between the M60 and the T-64. Despite its smaller size and tonnage, the T-80 is now assumed to have a fully-stabilized gun (for firing accurately on the move) and thermal-imaging (for seeing past smokescreens), two advantages formerly exclusive to NATO tank design.

During the Second World War, the Russians fielded the first of their great tank designs, the T-34. German designers looked at captured versions, said that the T-34 would never pass their quality control regulations, and developed the Panther and Tiger tanks. These were two of the finest tanks to come out of the war. However, the Russians could build five T-34s in the time it took the Germans to build two Panthers. The Russians won. Historical perspectives like this one give NATO tank designers nightmares.

NATO assumes that it will be assailed with three-to-one odds, but that the quality of its armored vehicles, plus its anti-tank and aircraft forces, will make the difference. One hopes this theory need only be tested in computer simulations like this one.



Combined Arms Theory

In the past, tanks either slowed down to the speed of dismounted infantry or dashed out ahead and attempted to operate independently. In the former case, they might as well have been artillery pieces and they lost the benefit of their mobility and speed. In the latter case, they were too easily ambushed by infantry with anti-tank weapons.

The role of infantry and tanks has changed in theory. Now the Infantry Fighting Vehicle (such as the Russian BMP and the American M2 Bradley) is intended to stay with the tanks and allow its cargo to fire from the protection of the vehicle through gun ports. The vehicle also acts as a mobile gun platform to back up dismounted infantry, and the infantry can disembark to take up defensive positions, then reembark to push on to the next objective in little time.

This speed allows the infantry to keep up with the tanks and has turned modern warfare into what is theorized to be a very fluid sort of combat, with little in the way of "front lines" as they were known in the previous World Wars.

Whether this theory will work out as expected is still very much up in the air. The only modern conflicts to use masses of infantry and armor working together (and that without the latest tanks and Infantry Fighting Vehicles) were the Yom Kippur war in the Middle East in the early 70s and the recently concluded Iran-Iraq war. Most modern theories still rehash the conduct of the Yom Kippur war; both sides of the Iran-Iraq struggle were very reluctant to allow foreign observers.

Considering the static nature of that war, one might assume that the practice of the theory of modern armored warfare will have to wait for its use by modern armored warriors — an eventuality that will no doubt please the theorists at the same time it terrifies the rest of the world.



GLOSSARY

B. Glossary

A-10 Warthog — American attack fighter, meant for close-in support work with ground forces. It is slow in comparison with most fighters and is not as maneuverable as other fighters, but it is well armored and is thought to have good survivability on the modern battlefield.

AAA (Anti-Aircraft Artillery) -This is the military designation for any tube artillery (artillery that fires projectiles instead of self-propelled missiles) used against aircraft. The M-163 Vulcan (q.v.) and ZSU-23-4 Shilka (q.v.) are examples of AAA used in this game.

AAM (Anti-Aircraft Missile) — This is the military designation for self-propelled missiles used against aircraft. The hand-held infantry Stinger is an example of an AAM used in this game.

AFV (Armored Fighting Vehicle)— The official description of what is generally known as a tank.

A-1064 Apache -An American attack helicopter meant to deliver the most punch with the most precision.

APC (Armored Personnel Carrier) — This is a tracked vehicle meant to carry a squad of infantry and protect them from small arms and other anti-personnel weapons. Its armor is usually aluminum and useless against any form of armor-piercing ammunition. Troops inside one of these vehicles are strictly passengers. The vehicle brings them to the site of the fighting, at which time they must disembark and fight on foot while the vehicle supports them with its minor weaponry.

APFSDS (Armor-Piercing Fin-Stabilized Discarding Sabot) — This is the full designation for the main gun round commonly called a Sabot (q.v.).

ATGW (Anti-Tank Guided Weapon) — A general designation for infantry support missiles meant to destroy tanks. The operator must keep his sights on the target tank until the missile hits the tank, which can take up to ten seconds, depending on the range.



GLOSSARY

All known ATGWs use HEAT (q.v.) ammunition, which is not very effective against the new Chobham (q.v.) type armor on the most modern Main Battle Tanks.

Battalion — A group of two or more companies (q.v.) commanded by a lieutenant colonel or major. This is generally the smallest maneuver unit considered in operational planning. American battalions are usually organized as either infantry or armor battalions. Normal battle doctrine involves battalions trading companies; an infantry battalion will trade a company of its infantry for a company of tanks from an armored battalion, so that each battalion has a combined arms capacity.

Bearing — The direction the main gun of the tank is pointed. This may or may not have anything to do with the tank's Heading (q.v.).

BMP — Soviet IFV (q.v.). There are two types, the BMP-1 and the BMP-2. The BMP-1 was the first IFV introduced into any army. Its design flaws were corrected with the BMP-2. Among the improvements are increased armor, a better position for the vehicle commander and an improved light anti-tank gun.

Chobham armor — Armor developed by the British at the Chobham Laboratories to dissipate the effects of HEAT (q.v.) rounds. An inner core of ceramic scales absorbs the heat and dissipates it inside the armor, significantly reducing the penetrability of the HEAT missile. The inner core also serves to deflect penetrating Sabot (q.v.) rounds and dissipate their kinetic energy. Current tests indicate that the Sabot rounds may destroy the HEAT-absorbing quality of the armor, and the army is looking into using depleted (non-radioactive) uranium armor either as a supplement or a replacement. The M1A2 tanks used in this game are considered to have uranium armor.

Company- An organization of (usually) four platoons (q.v.), usually commanded by a captain. An armored company is also known as a "troop," a vestige of its cavalry roots. An artillery company is known as a battery.



GLOSSARY

Cupola — A mini-turret that rests on top of the tank turret and moves independently of the main turret. The tank commander uses the cupola slit to look at areas the driver and gunner cannot see.

D-30 (122mm field gun) — This is one of the standard field guns of the Soviet army. It has great range and striking power.

Enfilade — A shooting position from which the attacker can attack the side of a target where the armor is less effective.

FAC (Forward Air Controller) -A field officer trained in calling for air strikes against enemy formations. Sometimes the FAC is equipped with a laser device that marks a target for an attacking plane's laser-guided bombs.

FAO (Forward Artillery Observer) -An artillery officer usually attached to a front line company or battalion whose job is calling for artillery strikes at the request of the field commander. The FAO coordinates observed enemy formations with his map and gives the distant artillery map coordinates to shoot at.

Fire Mission -This is a term for the artillery strike called in by an FAO. Since there are many calls on an artillery Battery's services, one particular unit may be given only a few calls (or fire missions) on the services of the battery.

FitRep (Fitness Rating) -This is the report made on every member of the armed services by his commanding officer. In this game, it is symbolized by the score you receive when you complete a mission. If you receive a high score, you have received a good FitRep.

Heading- The direction the tank's front is pointed, the direction of its forward movement.

HEAT (High Explosive Anti-Tank round) -When this shell strikes the target's surface, the contact sets off a shaped charge that releases a jet of super-heated gas that can burn a hole through the toughest metal armor. Most infantry anti-tank weapons have HEAT missiles.



GLOSSARY

IFV (Infantry Fighting Vehicle) — This is an improvement over the APC (q.v.); infantry inside the vehicle can engage targets with their personal arms through gunports without leaving the vehicle. The best examples of this form of vehicle is the American M-2 Bradley (q.v.) and the Russian BMP-1 and BMP-2 (q.v.).

Laager- An Afrikaaners term describing a defensive encampment defended by a circle of armored vehicles. Originally it described an encampment protected by a ring of wagons, but times change.

Laser Range Finder (LRF) — A laser device used to determine the exact range to a target.

M1 -The Abrams Battle Tank. One of the subjects of this game.

M1A1 — The later version of the M1 Abrams. It differs from its predecessor in its main armament (a 120mm smoothbore instead of a 105mm rifled) and the provision of thermal imaging (q.v.) for both driver and gunner.

M113 — This APC (q.v.) is slowly being replaced by the M2 Bradley IFV (q.v.). It is similar to the Bradley in basic function, but does not have the built-in 30mm turret nor the gun ports for internal use by passengers. It is still the main base vehicle for several US Army weapon systems, including the M163 Vulcan anti-aircraft vehicle. The M113 is used by many other nations' armies.

M163 Vulcan-This is a rapidfire 20mm cannon mounted on a M113 APC that is used for anti-aircraft support and anti-personnel missions. It was supposed to be replaced by the Sgt. York anti-aircraft weapon, but development of the York was halted when Congress learned that it was over-budget and not fulfilling its function. The Vulcan has been in service since 1965 and shows its age, but it is all the US has at the moment, and all it will have for at least another five years.

A.4198 (155mm cannon) — This is one of the main field guns of the United States Army. It is being phased out in favor of self-propelled artillery, but its relative lightness makes it easily air-



GLOSSARY

portable, and therefore still useful for forces that must airdrop their artillery support.

M-2 (The Bradley FV) — A fully tracked infantry fighting vehicle used by American and some NATO forces. It can carry a squad of men and has provisions for them to remain inside the vehicle while using gunports to fire outside. It also mounts a light cannon for engaging other light vehicles and two TOW rockets for engaging heavy armored vehicles. However, its main function is to avoid enemy armored vehicles and get its cargo where it needs to go.

M-3 (The Bradley CFV) — This is the Cavalry Fighting Vehicle equivalent of the M-2. It has an increased load of TOW missiles and is used for infantry support and reconnaissance. It does not carry a complement of infantry.

MI-24 — Soviet helicopter known by the NATO designation of Hind. It is similar in form and function to the American AH-64.

MBT (Main Battle Tank) — This is the usual term used to describe the standard tank of an armored force. It is a development from the former designation of "Medium" tank, which fell into disuse as new developments in tank design effectively combined the armor and weaponry of "Heavy" tanks with the speed and maneuverability of "Medium" tanks.

NATO (The North Atlantic Treaty Organization) — The alliance of most Western European and North American nations to forestall Russian invasions of Western Europe. The members include the USA, Canada, England, Italy, Turkey, Greece and West Germany. The member nations have a central military command that coordinates their efforts and tries to mandate (usually unsuccessfully) a unified system of weapons for all members. France is allied to the alliance, though it refuses any military control from non-Frenchmen.

Operations — The maneuvering of units of battalion to divisional strength as part of an overall strategic (see strategy) plan.

Platoon — The smallest group of soldiers commanded by an officer (usually a first lieutenant). A modern infantry platoon is



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usually four squads of ten men each, plus the commanding officer, his first sergeant and a small staff. A tank platoon consists of four four-tank squads plus the commanding lieutenant and first sergeant's vehicle. Since each tank has a crew of four men, the tank platoon has about half the personnel of an infantry platoon.

Reactive Armor— Initially developed by Israel, this consists of plastic explosive behind a steel plate that reacts to a HEAT (q.v.) round by breaking up the plasma jet and destroying its destructive force. The explosion of reactive armor also deflects the impact of the Sabot round. It is the main anti-HEAT expedient employed by the Soviet army.

Reconnaissance Drone — An unpiloted, radio-controlled aircraft meant to scout out enemy forces without (1) showing up on enemy detection devices because of its small size and (2) risking the life of a valuable pilot. These drones are only now starting to see use in US military forces, although Israel and other nations have been using them successfully for years.

S-1 Adjutant -The personnel officer for a unit. This officer makes sure that there are men available to do the tasks commanded by the commanding officer and to make sure the men are in shape to do the tasks.

S-2 Intelligence Officer— The officer in charge of telling the commanding officer what is known about opposing forces. This officer and the S-3 Operations officer (see below) are the most vital officers for planning any battle. Frequently, the CO of a unit gets the information from the S-2, then uses that information to give orders to his S-1, S-3 and S-4.

S-3 Operations Officer— The officer in charge of the fine planning of whatever operation the commanding officer wants done. In planning the route of a tank battalion or platoon, you are essentially performing the function of an S-3 officer.

S-4 Logistics Officer— The officer in charge of making sure that supplies reach the unit so that it can fulfill its objective. This vital function is provided by the computer in this game, which sets up what materiel you start the game with and establishes supply



GLOSSARY

depots to resupply from. The computer then does what the S-4 would do, make sure the supplies show up where the commanding officer wants them.

Sabot (SaBOH) — This is literally the French word for shoe. It refers to the delivery system for an anti-tank weapon which is simply a rod (usually fin-stabilized) of dense material (the current favorite is depleted uranium) that travels at great speed because the sabot drops off as it leaves the barrel, giving the rod all the velocity of the high caliber round imparted to the weight and small cross-section of the rod. The rod punches its way through most armor very handily, then breaks up inside the tank, raining shrapnel all around.

Strategy- The overall plan of maneuver and engagement for large forces (division and above) to accomplish objectives oriented towards ending the entire conflict, rather than just achieving a battlefield objective. These strategic objectives are accomplished through operations and *tactics*.

SU-25 "Frogfoot" — This is a Soviet ground support fighter that is somewhat similar to the A-10, though it is not as heavily armed and armored. It has excellent endurance and carries similar weaponry to the A-10's.

T-72 -The Soviet Main Battle Tank most commonly exported to other countries. It is commonly used in Warsaw Pact countries. It has a diesel engine and is vulnerable to most NATO tank ammunition.

T-80 — The current Soviet main battle tank. It is the first Soviet tank to be equipped with a turbine engine and its armor is very effective against the effects of HEAT shells. It is also thought to use a thermal-imaging system.

Tactics — The use of small units (companies down to individual personnel) to accomplish limited objectives as part of an overall operation (q.v.).

Thermal Imaging — A passive infrared sight that allows the user to trace targets by their heat, whether covered by smoke and fog



GLOSSARY

or not. The M1 mounts this device, while most Russian tanks do not, probably because of the cost — which is 10% of the cost of an M1 tank.

T. O. W. (Tube-launched, Optically-tracked, Wire command/line guided missile) — This is a name used both for small missiles meant to destroy a tank and their launcher. This is a mounted weapon, using a HEAT warhead, frequently found on IFVs and special jeeps and trucks.

UAV (Unmanned Airborne Vehicle) — This is the military designation for drones now being developed for battlefield reconnaissance and possible combat applications. These vehicles are overgrown radio-controlled airplanes mounting cameras and other sensors that are flown by a pilot who is safe behind the lines operating the craft by radio link.

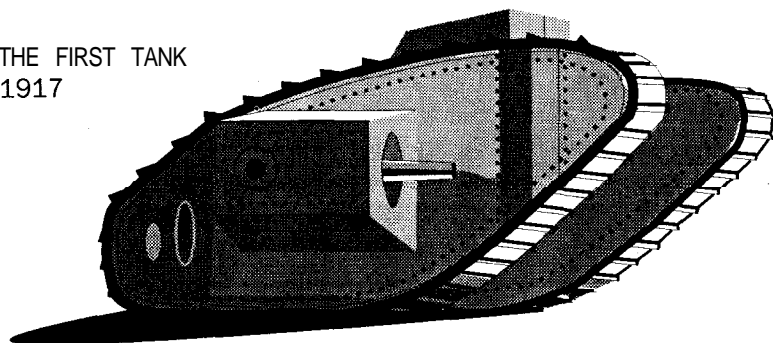
Warsaw Pact — The alliance of the Soviet Union and Eastern European countries formed to offset the perceived threat of NATO (q.v.). It is named for the Polish capitol where the pact was signed. Signatories include the Soviet Union, Poland, East Germany, Czechoslovakia, Bulgaria, Rumania and Hungary.

ZSU-23-4 Shilka — This Soviet weapon is similar in function to the US Army's M163 Vulcan (q.v.), but it is more powerful and modern; it has a number of radar-assisted functions that the Vulcan cannot match.

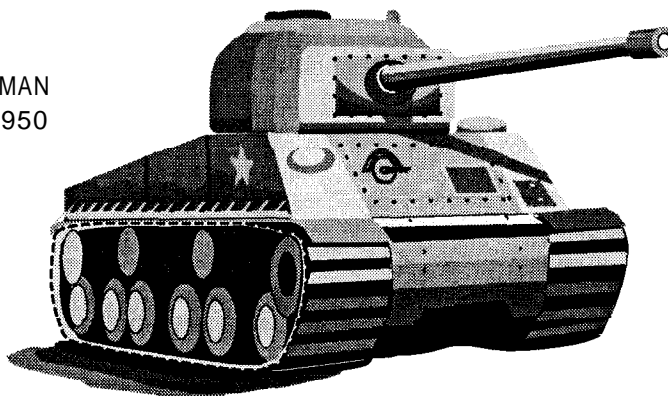


TANKS THEN AND NOW

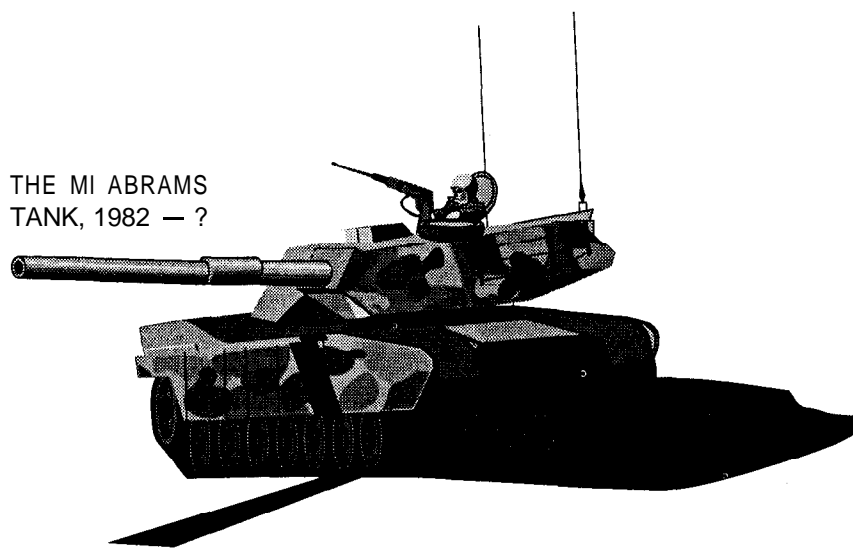
THE FIRST TANK
1917



THE M4 SHERMAN
TANK. 1940-1950



THE M1 ABRAMS
TANK, 1982 — ?

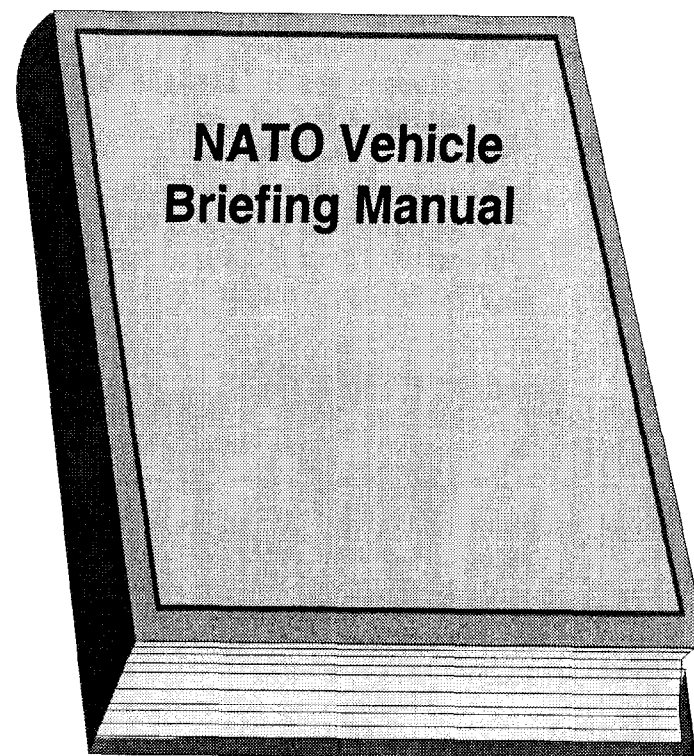


FRIENDLY VEHICLES

C. TECH SPECS, FRIENDLY VEHICLES

Probably the saddest obituary a soldier can have is "killed by friendly fire." In the confusion of a modern battlefield, keeping track of friendly vehicles and distinguishing them from enemy vehicles (see the next section) is of paramount importance. A lot of lives can rest on your ability to distinguish friend from foe — fast.

This Appendix describes the technical specifications of the M1A1 Main Battle Tank that you will be using in this game, plus descriptions of the other friendly vehicles you will see and should not shoot at.

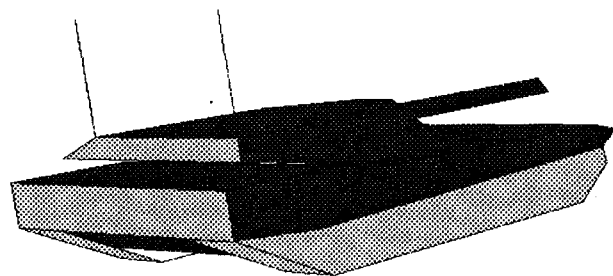




MI ABRAMS

M1-Abrams

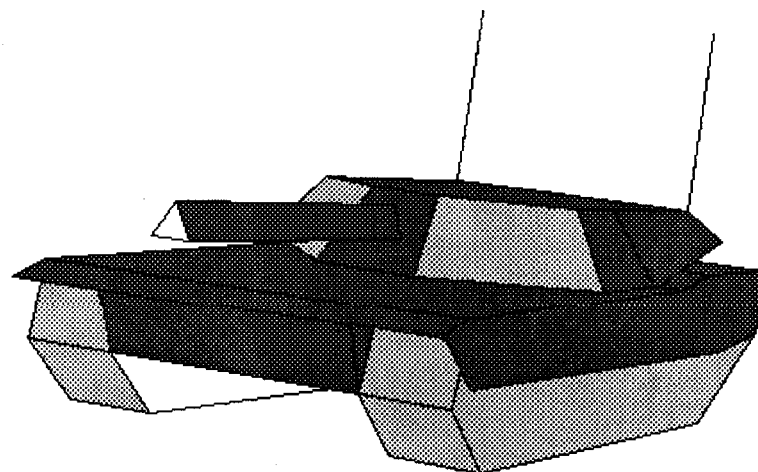
Origin: USA
 Crew: 4
 Armament: One rifled M68 105mm gun; one 7.62mm coaxial machine gun; one 7.62mm machine gun at loader's station; one 12.7mm (.50 caliber) at commander's station; six smoke dischargers each side of turret.
 Armor: Chobham heavy armor. Reactive armor can be fitted for protection to thinner-skinned areas.
 Dimensions: Length including main gun 32ft (9.766m); hull length 26ft (7.918m); width 12ft (3.653m); height 9ft 6in (2.885m).
 Combat Weight: 120,250lb (54,545kg or 60.125 tons)
 Ground Pressure: 13.7psi (0.96kg/cm²)
 Engine: Avco Lycoming AGT-1500 gas turbine developing 1,500hp (1,118kW) at 3,000 RPM.
 Performance: Road Speed 45mph (72.421km/h), range 310 miles (498km); vertical obstacle 4ft 1in (1.244m); trench 9ft (2.743m); gradient 60%



MI ABRAMS

General Notes: The M1 was introduced as a replacement for the cancelled joint USA/West German MBT-70 project. It is the first United States tank to feature a turbine engine and Chobham armor, and was accepted into a building program largely due to the testimony of the tank sergeants who tested the prototype. It features many innovations in tank design, including a stabilized gun and laser sighting mechanism that allows it to be fired on the move with little loss of accuracy, an innovation that has caused a major revision of American tank tactics. The change to a turbine engine has met with some criticism, but in general it has proven more trustworthy than the diesel used in the previous M60 main battle tank.

The original M1 has been replaced in production by the M1A1, described below. The Army is reportedly pulling all M1s out of Europe because it fears the 105mm gun is ineffective against the Soviet T-80's front and turret armor.

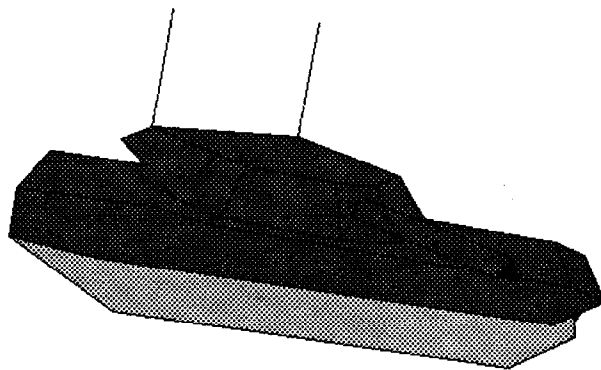




M1A1 ABRAMS

M1A1-Abrams

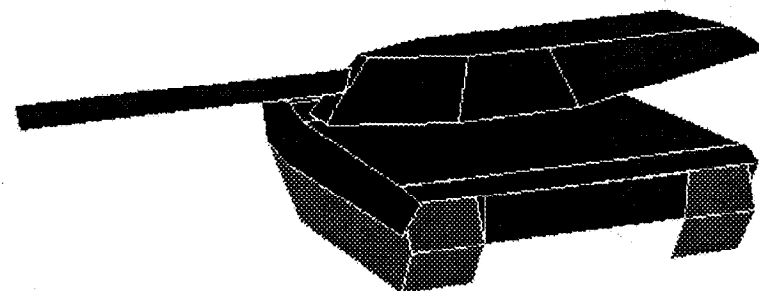
Origin: USA
 Crew: 4
 Armament: One smoothbore Rheinmetal 120mm; one 7.62mm coaxial machine gun; one 7.62mm machine gun at loader's station; one 12.7mm (.50 caliber) at commander's station; six smoke dischargers each side of the turret.
 Armor: Chobham heavy armor, with thicker armor than the M1 in the frontal areas. Reactive armor can be fitted for protection to thinner-skinned areas.
 Dimensions: Length including main gun 32ft (9.766m); hull length 26ft (7.918m); width 12ft (3.653m); height 9ft 6in (2.885m).
 Combat Weight: 126,000lb (57,200kg or 63 tons)
 Ground Pressure: 13.7psi (0.96kg/cm²)
 Engine: Avco Lycoming AGT-1500 gas turbine developing 1,500hp (1,118kW) at 3,000 RPM.
 Performance: Road Speed 45mph (72.421km/h), range 310 miles (498km); vertical obstacle 4ft 1in (1.244m); trench 9ft (2.743m); gradient 60%



M1A1 ABRAMS

General Notes: The main difference between the M1 and the M1A1 is the substitution of the German-designed 120mm gun for the 105mm gun (originally designed by the British). This is part of a NATO policy of standardizing subcomponents of military hardware; the gun and its ammunition is compatible with that used in the German Leopard II. The M1A1 also adds an extra thermal imager for the commander's station and an improved laser rangefinder.

In every mission presented in this game, the usual tank available is the M1A1, the current workhorse of the US Army armored divisions.

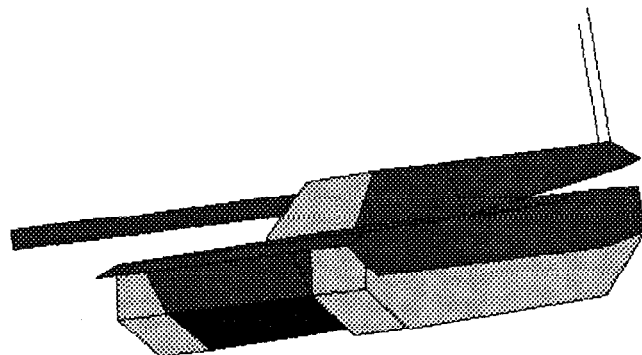




M1A2 ABRAMS

M1A2 - Abrams

Origin: USA
 Crew: 3
 Armament: One smoothbore 140mm; one 7.62mm coaxial machine gun; one 7.62mm machine gun at loader's station; one 12.7mm (.50 caliber) at commander's station; six smoke dischargers each side of turret.
 Armor: Chobham heavy armor, with thicker armor than the M1 in the frontal areas. Reactive armor is fitted for protection to thinner-skinned areas.
 Dimensions: Length including main gun 32ft (9.766m); hull length 26ft (7.918m); width 12ft (3.653m); height 9ft 6in (2.885m).
 Combat Weight: 110,000lb (50,000kg or 55 tons)
 Ground Pressure: 13psi (0.85kg/cm²)
 Engine: Avco Lycoming AGT-1500 gas turbine developing 1,500hp (1,118kW) at 3,000 RPM.
 Performance: Road Speed 45mph (72.421km/h), range 310 miles (498km); vertical obstacle 4ft lin (1.244m); trench 9ft (2.743m); gradient 60%



M1A2 ABRAMS

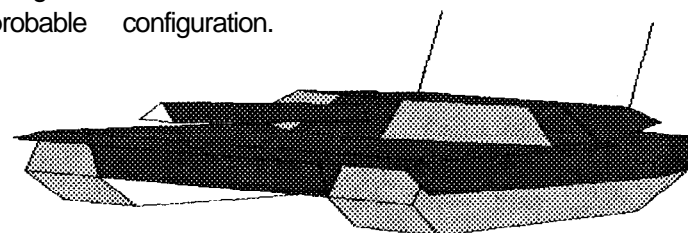
General Notes: The M1A2 is still under design and could end up being an entirely different tank from the one described here. The statistics given here are based on the assumption that the new tank will be a development from the M1, rather than a departure, and based on Pentagon statements as to the desired nature of the new tank.

The main differences between the M1A1 and the M1A2 are the fitting of depleted uranium armor for further protection from HEAT rounds and the fitting of a 140mm gun. This is part of a NATO agreement between the British, West Germans and Americans to standardize on a heavy caliber gun capable of penetrating Soviet armor.

One criticism of implementing this program is that the tanks cannot carry enough ammunition for a 140mm weapon to make them viable fighting vehicles in any kind of an extended battle. The weight of the 140mm projectile makes an automatic loader necessary, a step which the US military is uncomfortable with. Among the problems of an automatic loader is the necessity to eliminate the blast doors that currently separate the crew from the ammunition in case of a hit to the ammunition lockers.

NATO is currently looking into alternate projectiles and weapons to shoot them, such as solid rounds shot from magnetic accelerators (rail guns) instead of propelled by gunpowder, to try to find more punch for the pound. Some developers think they can have such a gun by the mid-1990s. It would not depend on penetrating tank armor; it would just provide enough kinetic force to knock a turret off a tank.

In the missions presented in this game, the M1A2s are designed after the most conservative estimate of their probable configuration.





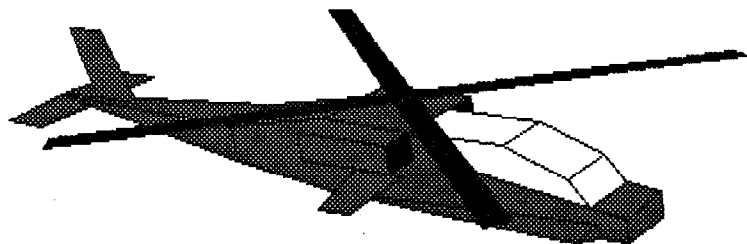
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AH-64 APACHE

AH-64 Apache

Origin: USA
 Crew: 2
 Dimensions: Rotor diameter 48ft (14.62m); Fuselage length through tail rotor 48ft 2in (14.68m); height from ground to top of air-data sensor 16ft 9.5in (5.12m)
 Weights: Empty 11,000lb (4,990kg); Normal mission weight 14,694lb (6,665kg); maximum takeoff 17,650lb (8,006kg).
 Engines: Two 1696shp General Electric T- 700/ 701 turboshafts
 Performance: Maximum level speed 186mph (300km/h); max cruise 182mph (293km/h); max sea level vertical rate of climb 2,500ft/min (762m/min); OGE hover ceiling 10,200ft (3,109m); Max range on internal fuel 428 miles (689km).

General Notes: Initially called for in the early 1960s, the Apache was not finally chosen until 1976 and did not start production until 1982. It is a good all-around attack helicopter with high survivability. It is both hard to spot and hard to hurt.



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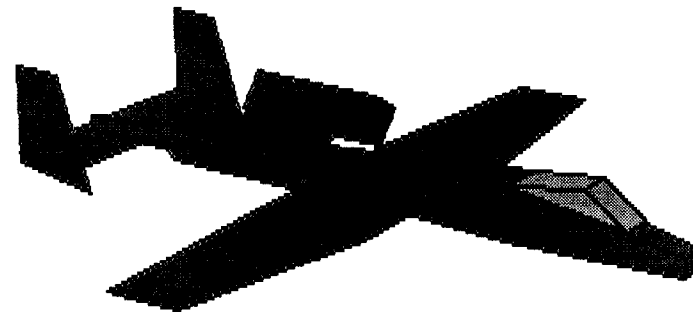
A-10 "WARTHOG"

A-10 Thunderbolt II "Warthog"

Origin: USA
 Crew: 1
 Armament: 30mm chain driven cannon, plus assorted wing loads up to 16,000 lbs (7,257 kg).
 Dimensions: Length 53 feet, 4in (16.25m); height 14 feet, 8 inches (4.47m); wingspan 57 feet, 6 inches (17.53m).
 Combat Weight: 45,000lbs (20,450kg) (22.5 tons)
 Engines: Two TF34 GE-100 axial flow turbofans.
 Performance: Combat Speed 387 knots (717 kmhr); Rate of Climb 3290ft/min (1012 m/min); Service ceiling 34,700ft (10,676 m); Combat radius 250 miles (400km)

General Notes: This plane's official designation is the Thunderbolt II, but throughout its development time the groundcrews and test pilots called it the Warthog and the name stuck.

The Warthog is no longer in production, but is still the all-purpose ground support aircraft of choice for anti-tank operations. It is slow and clumsy-looking, but it is highly maneuverable, operates under adverse conditions and can land in a (smooth and level) cow pasture.





M2 BRADLEY

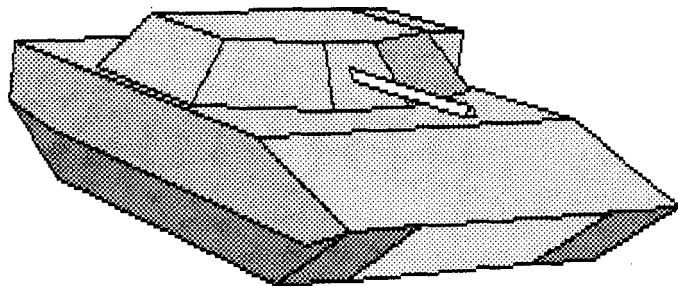
M2 Bradley

Origin: USA
 Crew: 3+7
 Armament: One 25mm cannon; one coaxial 7.62mm machine gun; Twin launcher for Tow anti-tank missiles; four smoke dischargers on each side of turret.
 Armor: Light
 Dimensions: Length 21ft 2in (6.45m); width 10ft 6in (3.2m); height 9ft 9in (2.97m).
 Combat Weight: 49,802lb (22,290kg or about 25 tons)
 Ground Pressure: 752lb/sq in (0.53kg/cm²)
 Engine: Cummins VTA-903T turbo-charged 8-cylinder diesel developing 500hp (372kW) at 2,600rpm.
 Performance: Road speed 41mph (66km/h); range 300 miles (483km); vertical obstacle 3ft (0.914m); trench 8ft 4in (2.54m); gradient 60%

General Notes: There are actually two Bradleys. The M2 is an Armored Personnel Carrier meant to carry combat troops into battle and provide some survivability against anti-personnel weapons. It is a departure from the American M113 APC; troops inside have firing ports to shoot from.

The M3 version acts as a platform for many infantry support weapons, such as multiple launch rocket systems.

The Bradley is fully amphibious.



M163 VULCAN



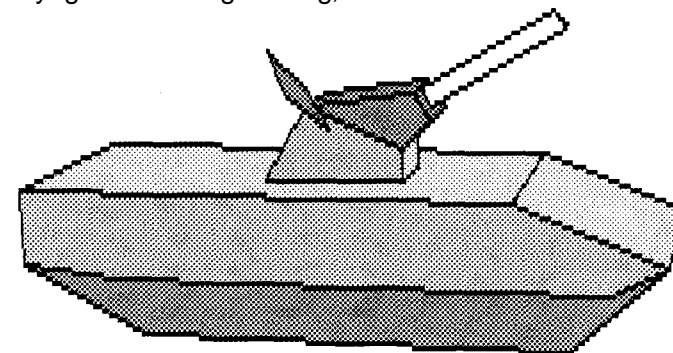
M163 Vulcan

Origin: USA
 Crew: 4
 Armament: One 20mm rapidfire cannon
 Dimensions: Length 15ft 11in (4.86m), width 9ft 4in (2.85m), height including turret 9ft (2.74m)
 Combat Weight: 27,082lb (13,310 kg or 13.5 tons)
 Ground Pressure: 9.52lb/sq.in. (0.61kg/cm²)
 Engine: 6-cylinder water-cooled diesel developing 215hp (160kW)
 Performance: Road Speed 42.24mph (67.6 km/h), range 302 miles (483km), vertical obstacle 2ft (0.61m), trench 5ft 6in (1.68m), gradient 60%

General Notes; The M163 is an M113 APC body fitted with a turret containing the famous 20mm Vulcan autocannon. It is primarily used for anti-aircraft support, though it can also be used against personnel and lightly armored enemy vehicles.

This vehicle originally saw action during the Vietnam war and was supposed to be phased out by the Sgt. York anti-aircraft weapon, but that program was scratched and the Vulcan will probably be providing support to armored and infantry units for another 10 years.

The Vulcan's main problems are a relatively short-range weapon and no real night/fog capability. The radar it uses is only good for range-finding, not search.





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M198, 155MM GUN

M198

Origin: USA
 Caliber: 155mm (6.1in)
 Length of Barrel: 240in (609.6cm)
 Weight in Action: 15,791lb (7.163kg)
 Muzzle Velocity: 1,850ft/sec (564m/sec)
 Rate of Fire: 4rds/minute
 Maximum Range: 19,850yd (18,150m)
 Shell Weight: 94.6lb (42.91kg)

General Notes: This gun/howitzer has been the standard US Army and Marine Corps field weapon since 1978. It is a very traditional model and can be airlifted under a CH-47D helicopter, but it lacks the auxiliary power unit and hydraulic actuating circuits featured in most other countries' similar weapons. This means that it must be man-handled into position by sheer muscle-power, calling for a crew of at least 11 men. However it is sturdy and reliable and has been exported to many other nations, including Saudi Arabia, Pakistan, Tunisia, Australia and Thailand.

The M198 can fire every sort of 155mm projectile, including Rocket Assisted Projectiles (RAP) that extend its range to 32,808yd (30,000m). The US Army is now calling for a new version of the M198 light enough to be carried under a Black Hawk helicopter, but duplicating the older gun's overall performance.



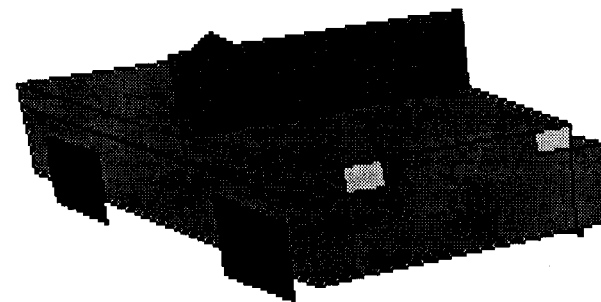
JEEP

Jeep
 Origin: USA and other NATO nations
 Crew: 1+3
 Armament: Varies
 Dimensions: Varies
 Combat Weight: Varies
 Engine: Varies
 Performance: Road speed approximately 55mph(88 km/h)

General Notes: This is a general description of small vehicles used for some scouting and patrolling duties, usually behind the lines of any combat operation. They have been in use since World War II and go under a variety of names and designations. For this description we are using the traditional US military nickname, which originally stood for GP (General Purpose). They are still indispensable for many rear echelon duties and scouting missions where a 30 ton armored vehicle cannot or should not go. Their survivability in a combat situation, however, depends entirely on their speed and the skill of the driver.

The usual armament of these vehicles depends on the infantry weapons carried by the occupants. A simple, unarmored jeep can be deadly to a plane if one of its passengers is carrying a Stinger.

The classic jeep is now being slowly replaced by the HMMWV (High Mobility Multi-purpose Wheeled Vehicle) or Hummer, which discards the familiar open sides of the jeep for an enclosed vehicle. The HMMWV is used as a weapons platform.





TRUCK

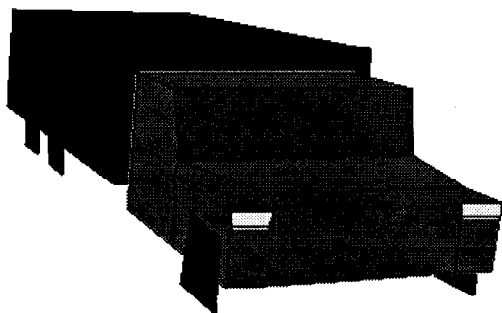
Truck

Origin: USA and other NATO nations
Crew: 1+?
Armament: Varies
Dimensions: Varies
Combat Weight: Varies
Engine: Varies
Performance: Road speed approximately 50mph (80km/h)

General Notes: This designation is given to all wheeled vehicles that are used for hauling troops and supplies to rear-echelon areas where they can be loaded into armored carriers for the final stage of travel to the front.

Many current models are built with six or eight wheels to enhance their off-road maneuverability, but they are still much slower than tanks across country and are more easily slowed or stopped by rough terrain. However, they are much cheaper to build and perform a vital service behind the lines. The concept of being behind "lines" is one that has lost credibility in the current atmosphere of rapid deployment and movement. Rear echelon vehicles like trucks can find themselves in the forward echelon only too easily.

Like the jeep, the truck can be a surprise to tank or aircraft if its passengers are carrying potent infantry weapons.

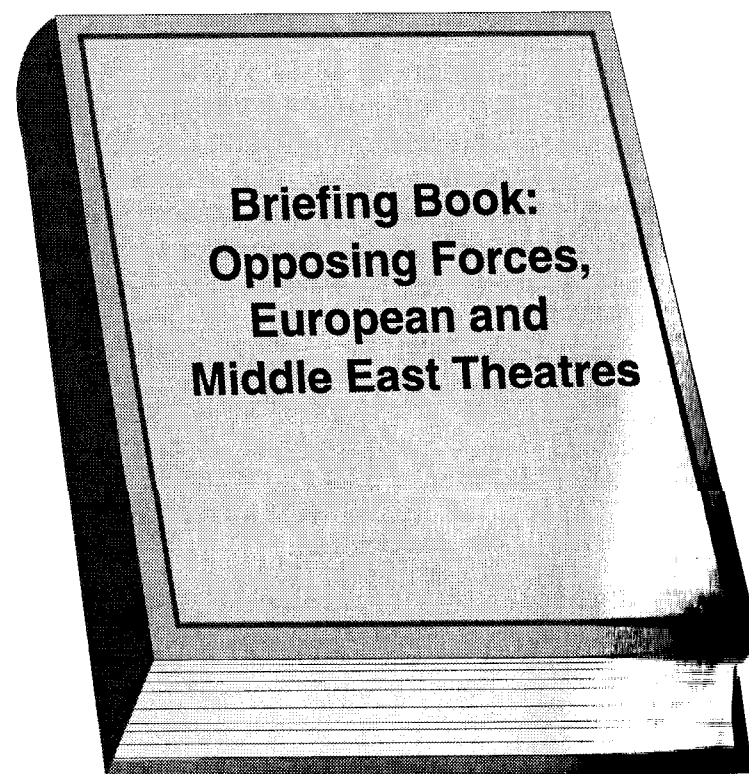


THE OPPOSITION



D. TECH SPECS, THE OPPOSITION

The following are descriptions of the enemy vehicles that your M1A1 is likely to encounter. Much of the following information is not necessary for game play, but is very handy if you want to know your enemy. Naturally, much of this information is a "best guess." In some cases we don't even know enough to guess about the specifications of a vehicle.





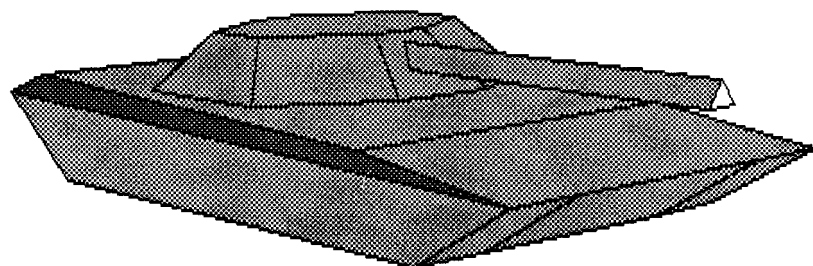
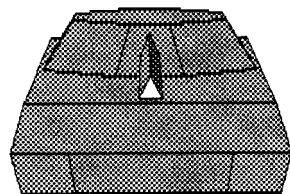
136

T-72

T-72

Origin: USSR
 Crew: 3
 Armament: One 125mm Gun; one 7.62mm coaxial machine gun; one 12.7mm AA machine gun.
 Armor: Heavy
 Dimensions: Length including main armament 29ft 10in (9.1m); hull length 21ft (6.4m); width 11ft 1in (3.38m); height 7ft 6in (2.3m).
 Combat Weight: 83,775lb (38,000 kg or 42 tons)
 Ground Pressure: 14.3 lb/sq. in (1.09kg/cm²)
 Engine: 5-cylinder opposed liquid-cooled diesel developing 700/750hp (522/560kW).
 Performance: Road Speed 43.5mph (70km/h); range 280 miles (450km); vertical obstacle 3ft (0.915m); trench 8ft 11in (2.72m); gradient 60%

General Notes: This tank was never part of the USSR armored forces, but is common in Warsaw Pact and other Soviet-influenced countries.

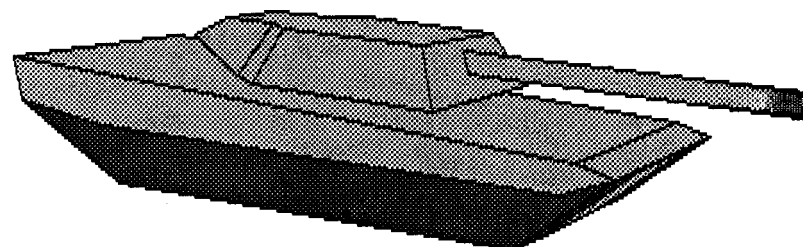
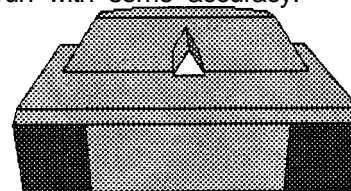


T-80

T-80

Origin: USSR
 Crew: 3
 Armament: One 125mm Gun; one 7.62mm coaxial machine gun; one 12.7mm AA machine gun.
 Armor: Heavy
 Dimensions: Length including main armament 32ft 6in (9.9m); hull length 24ft 3in (7.4m); width 11ft 2in (3.4m); height 7ft 3in (2.2m).
 Combat Weight: 94,798lb (43,000 kg or 47 tons)
 Ground Pressure: 11.80lb/sq. in (.83kg/cm²)
 Engine: gas turbine developing 985hp (735kW).
 Performance: Road Speed 46.6mph (75km/h); range 248 miles (400km); vertical obstacle 3ft (0.9m); trench 8ft 10in (2.7m); gradient 60%

General Notes: This is the latest Soviet Main Battle Tank and has not been exported out of the Soviet Union. It boasts a thermal-imaging system similar to that in the M-3 and a gun stabilizing system that allows it to shoot on the run with some accuracy.





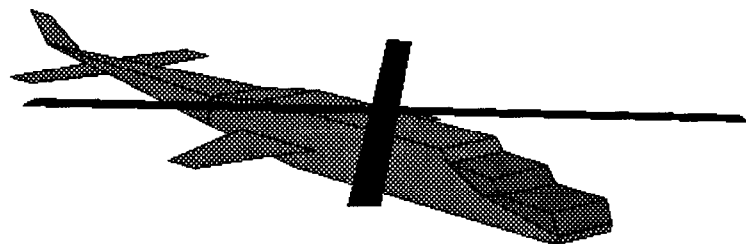
138

MI-24 "HIND"

MI-24 (NATO designation - Hind)

Origin: USSR
 Crew: 2
 Engines: Two 2,200shp Isotov TV3-117 Turboshfts
 Dimensions : Main rotor diameter 55ft 9in (estimated) (17m); length with turning rotors 68ft 11in (21m); fuselage length 60ft 8in (18.5m); height with rotors turning 21ft 4in (6.5m).
 Weights: Empty 18,000lb (8182kg); normal [estimated] loaded 24,000lb (10,910kg).
 Performance: Maximum level speed 200mph (320 [In service] kph); cruising speed 183 mph (295kph); maximum rate of climb 2,953ft/min (900m/min); combat radius up to 600 miles (960 km).

General Notes: The Hind is an extremely versatile attack helicopter which, besides its primary mission of destroying any target it sees with its small arsenal of cannon and missiles, can also be used to ferry small numbers of troops into combat, ferry smaller numbers out of combat (on stretchers), or transport vital cargo into a battle zone. It is a reliable and well-protected helicopter that is still in production even though the M-28 (Havoc) is beginning to replace it. Most Warsaw Pact countries feature this aircraft in their arsenals.



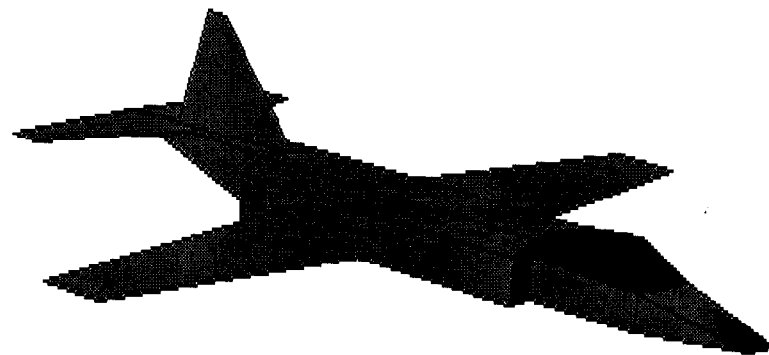
139

SU-25 "FROGFOOT"

SU-25 (NATO designation Frogfoot)

Origin: USSR
 Crew: 1
 Armament: Varies
 Dimensions: Length 49ft 2.6in (15m); Span 46ft 10.8in (14.3m); Height 16ft 4.9in (5m).
 Weights: Empty 19,200lbs (8,709kg); Maximum take-off 40,000lb (12,700kg); Maximum external load 12,000lb (5,443kg).
 Engines: Two Tumanskii R-13-300 turbojets with 11,250lb (5,100kg) military thrust.
 Performance: Max Velocity 0.74 Mach; Ceiling Not Known; Initial Climb Rate Not Known; Take-off run 1,500ft (457m); Landing run 1,200ft (366m); Operational radius 300 miles (556km)

General Notes: This plane first appeared in 1981 and has been exported to Hungary, Czechoslovakia and Iraq. It is a ground support aircraft that does not have an internal tank-busting cannon like the A-10 but has lots of wing-bearing capacity for guns, bombs and rockets. It has a greater speed than the A-10, but is not considered to be as maneuverable or as survivable.





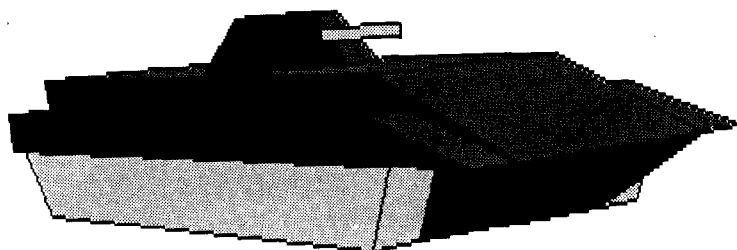
BMP-2

BMP-2

Origin: USSR
 Crew: 3+7
 Armament: One 30mm cannon; one 7.62mm coaxial machine gun; one launcher for AT-5 Spandrel anti-tank missiles; three smoke dischargers on each side of turret.
 Armor: 1.29in (33mm) maximum
 Dimensions: Length 22ft (6.71m); width 10ft 2in (3.1m); height 6ft 9in (2.06m).
 Combat Weight: 32,187lb (14,600 kg or 16 tons)
 Ground Pressure: 9.1 lb/sq in (0.64kg/cm²)
 Engine: 6-cylinder super-charged diesel developing 400hp (298kW).
 Performance: Road Speed 40mph (65km/h); range 372 miles (600km); vertical obstacle 2ft 3in(0.7m); trench 8ft 2in (2.5m); gradient 60%

General Notes: This is the successor to the BMP-1, the first infantry fighting vehicle that brought heavy firepower and the ability of the troops inside to fire at outside targets through firing ports to the battlefield.

The BMP-2 is used by several Warsaw Pact countries as well as the USSR; it carries seven infantrymen and is fully amphibious. The hull is also used to carry other specialized weaponry. The two BMPs look very similar at a distance.



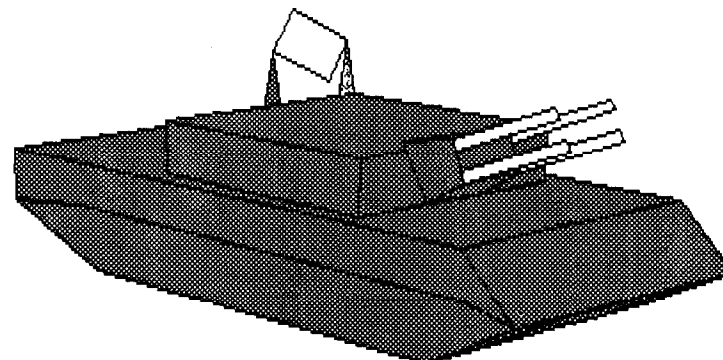
ZSU-23-4 SHILKA

ZSU-23-4 Shilka

Origin: USSR
 Crew: 4
 Armament: 4x23mm cannon
 Dimensions: Length 21ft 6in (6.54m), width 9ft 8in (2.95m), height with radar up 12ft 6in (3.8m), without radar 7ft 5in (2.25m).
 Combat Weight: 45,194lb (20,500kg or 22.5 tons)
 Ground Pressure: 9.8lb/sq.in. (0.69kg/cm²)
 Engine: G-cylinder inline diesel developing 280hp (208kW).
 Performance: Road Speed 27.3mph (44km/h), range 280 miles (450km), vertical obstacle 3ft 7in (1.1m), trench 9ft 2in (2.8m), gradient 60%

General Notes: This is a very modern weapon with target search and acquisition fire control radar. It is slower than its American Vulcan counterpart, but has better cross-country performance and can keep up with the tanks better. More important, it is an all-weather weapon capable of operating efficiently at any time and in any conditions.

Unlike most modern tanks, however, the Shilka has to be stopped to use its weaponry effectively, though it can find targets on the move.





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D-30, 122MM GUN

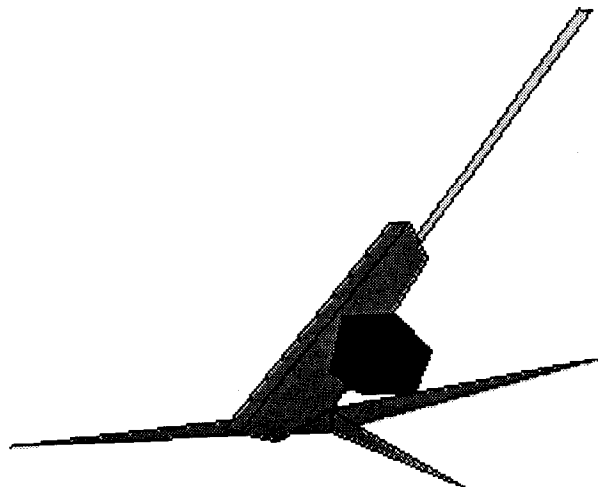
D-30

Origin: USSR
 Calibre: 121.92mm (4.8in)
 Length of Barrel: 191.9in (487.5cm)
 Weight in Action: 6,944lb (3,150kg)
 Muzzle Velocity: 2,438ft/sec (740m/sec)
 Rate of Fire: 7-8rds/min
 Maximum Range: 16,842yd (15,400m)
 Shell Weight: 47.97lb (21.76kg)

General Notes: The D-30 is best categorized as a "gun howitzer" because it has the high trajectory of the traditional howitzer, but the long barrel of the traditional field gun. Besides the standard High Explosive (HE) shells described above, it can also fire Rocket Assisted Projectiles (RAP) an additional 7,000yd (6,500m).

This gun has been widely exported to Warsaw Pact and other countries, and it is now copied and exported by Egypt and the People's Republic of China.

The D-30 is unusual in that its recoil mechanism is on the top of the barrel, instead of the traditional under-the-barrel position, and is towed by its barrel. Also, its unique three-leg deployment and the ability to raise its wheels above the legs give it a rapid 360° traverse.



TRUCK



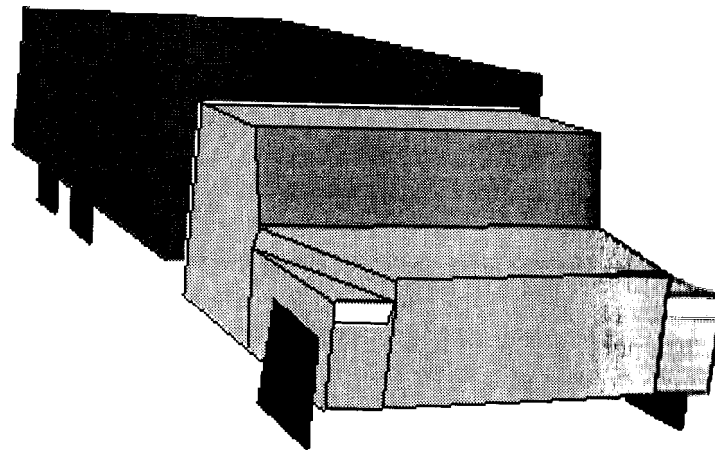
Truck

Origin: USSR and Warsaw Pact nations
 Crew: 1+?
 Armament: Varies
 Dimensions: Varies
 Combat Weight: Varies
 Engine: Varies
 Performance: Road speed approximately 50mph (80km/h)

General Notes: This designation is given to all wheeled vehicles that are used for hauling troops and supplies to rear-echelon areas where they can be loaded into armored carriers for the final stage of travel to the front.

Many current models are built with six or eight wheels to enhance their off-road maneuverability, but they are still much slower than tanks across country and are easily slowed or stopped by rough terrain. However, they are much cheaper to build, and perform a vital service behind the 'lines. The concept of being behind "lines" is one that has lost credibility in the current atmosphere of rapid deployment and movement. Rear echelon vehicles like trucks can find themselves in the forward echelon only too easily.

Trucks and their personnel are mostly a hazard to a tank commander in terms of the man-portable anti-tank and anti aircraft weapons they may be carrying.





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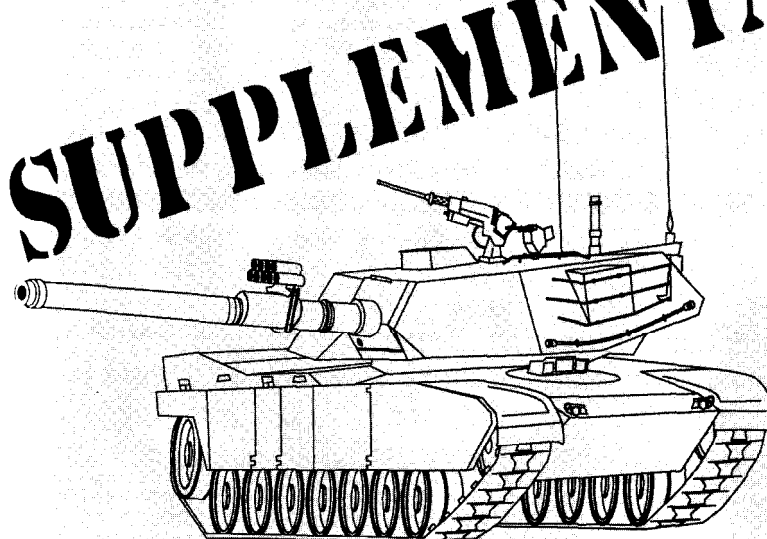
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TNK-A-DDE-NW-MO-1

Volume 1

OPERATOR'S MANUAL OPERATION UNDER USUAL AND UNUSUAL CONDITIONS

SUPPLEMENTAL



TANK, COMBAT, FULL-TRACKED 105MM GUM, M (2061-08-08-I 969) GENERALABRAMS

HEADQUARTERS, SPECTRUM HOLOBYTE

AUGUST 1993

TNK-IBM-60



A WORD ABOUT THIS GAME

We would like to thank you for purchasing one of our products. For your convenience you can make backups of the original disk(s) in order to protect your investment. Please remember that the developers of this product are relying on you not to give away copies to others. They have spent a lot of time, effort and money to bring this software to you, and are depending solely upon royalties from sales in order to make a living. Your purchase will allow them to invest the time and energy necessary to produce additional high quality software in the future.

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Gilman G. Louie
Spectrum HoloByte



INSTALLING YOUR TANK GAME

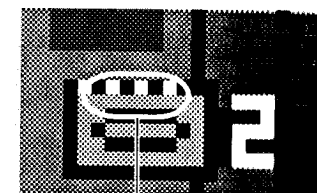
The **TANK** package no longer includes the 1.2MB 5.25" disk version of the program. The game is shipped only on one 1.44MB 3.5" disk. Please follow the instructions under "Making a Backup Copy of your TANK Disk" and "Loading TANK onto a hard drive" as described in the TANK manual

CHAPTER I

Page 9 — The Advanced Level of the game does not allow for nighttime Close Air Support (page 25) or Recon (page 26).




Page 10 — Reading the Icons

The icons shown on page 10 also show how many units are in each platoon. At the top of each platoon is a row of dots. Each dot stands for one unit, and its position shows which unit it is. When a unit (such as Tank 3 of Platoon #2) is destroyed, the dot for that unit goes away. If a unit is detached, there will be multiple icons, each with the appropriate dots on it for tanks still affiliated with that icon.





Number of tanks

The icons shown on the screen do not use the Armored Cavalry icon. Instead:



The Vulcan and Shilka AAA vehicles are represented by 
the Bradley CFVs and Russian BMPs are represented by 
the Supply Depot is represented by 

Page 11—Head-To-Head Play

If you are playing over a modem, you must decide who will call and who will answer before starting a head-to-head game.

When you select Multiple Players on the Players Menu, the Communications Setup Menu appears, which shows the default communication settings. Cycle through the options by pressing the  and  keys. The options and values are shown on the previous page.

You can save your communications setup (port, baud rate, phone number, etc.) by choosing "Save." This saves it until the next time you change and save it, no matter how many times you play the game. Start head-to-head play by choosing the "Done" option or return to the Configuration Screen by choosing "Exit."

Either player can end the game by using the  or  keys.



TANK — SUPPLEMENTAL INFORMATION

COMMUNICATION SETUP MENU		
CONNECTION	DIRECT	MODEM
PORT	COM 1	COM 2
BAUD RATE	1200	2400
	4800	9600
	19200	38400
	57600	
MODE	CALL	ANSWER
PROCEDURE	INITIAL	TAKE OVER
DIAL	STANDARD	SPECIAL
LINE TYPE	TO NE	PULSE
PHONE	NUMBER	STRING
306 555 1234		
DONE	SAVE	EXIT

To play over a direct connection, you need a null-modem serial cable. Use a regular serial cable with a null-modem adapter (found at computer stores) or a specific null-modem serial cable.

The head-to-head game is played on any of the mission maps. Over a modem, the Caller's choice is used if each player picks a different map. In direct connection, the choice is random.

Connection Hints

Choose "Direct" if you want to connect two computers with a null-modem serial cable.

Select "Com 1" or "Com 2" depending on which serial port you are using.

If playing over a modem, choose the fastest modem baud rate in common for you and your opponent. If you're playing over a null-modem serial cable, try the highest speed of 57.6K. If that doesn't work, keep trying the next highest baud rate until you reach 9600 baud.

Choose "Take Over" if you wish to dial by hand.

If your modem is not Hayes-compatible or if you wish to enter the modem commands yourself, select "Special" and you can enter a direct modem command. If you choose "Standard," you can enter a phone number in the space below.

The game will not start until both players have pressed "Done" on the Communication Setup Menu and "Begin Game" on the Game Configuration Screen.



TANK — SUPPLEMENTAL INFORMATION

Keep the following in mind:

1. This combat is strictly one tank vs. one tank. You cannot use any Operational Menu except the Zoom Menu. This means you must turn the Auto-Driver off when you enter the tank.
2. When one tank is destroyed, the game is over. The winner needs to press **[X]** or **[Esc]** to get out of the game.
3. You can set any Difficulty Level and day or night combat.
4. After the fight is over, you must restart the game.

Page 12 — Calibrating the Joystick

The joystick can be calibrated from either the Controls menu on the Configuration screen or by hitting **[Alt][J]** from the Driver's Screen **[F6]**. The first screen that appears allows you to adjust the sensitivity of the joystick with the **[←]** and **[→]** keys. Once you have entered your choice of sensitivity, just follow the directions on the screen and your joystick will be calibrated.

Joystick Enhancements

Joystick use has been enhanced in the following ways:

If you are using the "Show Scores" option on the **Game Configuration Screen** (page 13), use any button to return to the previous screen.

You can now use button #1 to increment an **Armament Screen** (page 14) selection and button #2 to decrement a selection.

On the **Main Menu** (pages 17-18), button #1 increases the platoon number and button #2 increases the tank number.

On the **Move Menu** (page 21), button #2 erases a node.

On the **Speed Menu** (page 23), button #1 increases and button #2 decreases the throttle speed in 1% increments.

On the **Formation Menu** (page 24), use either button to cycle through the platoon numbers.

On the **Close Air Support Menu** (page 25), button #2 ends a mission. The joystick and **[7]**, **[9]**, **[1]** and **[3]** keys on the numeric keypad move the mission target diagonally.

On the **Recon Menu** (page 26), button #2 erases a node. The joystick and **[7]**, **[9]**, **[1]** and **[3]** keys move the mission target diagonally.

In the **Zoom Mode** (page 29), button #1 zooms your viewpoint in and button #2 zooms it out. The joystick and **[7]**, **[9]**, **[1]** and **[3]** keys move the Zoom box diagonally.

On the **Outside Screen** (pages 36-37) and the **Trailer Screen** (page 38), button #2 aligns the turret to the hull.

In the **Gunner's View Screen** (pages 42-45), button #2 acts as a laser lock.



TANK — SUPPLEMENTAL INFORMATION

Page 14 — The Armament Screen only shows up for Beginner level games. In Intermediate and Advanced level, you are stuck with what the supply sergeant gives you. Also, there is no longer an "ALL" selection in the Platoon option.

CHAPTER II



COMMAND PERSONNEL

When your units are engaged in battle, you receive information from commanders of other units. A face pops up along with the name of the person, his location and his message. The number and source of these messages can be controlled through the Commander's Cupola screen (pages 54-55).

Page 17 — Operational Map Colors

The legend of map colors is incorrect. Black is now the road network, but the other colors remain the same as listed on page 34 of the manual.

For a true topographic map, press **[W]**, which provides a true map showing relative altitudes. The colors on this map are:

Black: Road network	Red: Highest ground
Brown: Higher ground	Magenta: High ground
Dark Grey: Middle ground	Light Grey: Low ground
Dark Green: Lower ground	Green: Lowest ground

Page 18 — ATTACH/DETACH applies to the highlighted tank on the Tank Status Selector (page 19). If you detach a tank, it no longer has to follow the commands given to the platoon. However, it follows the platoon commands until you give it separate orders on the Move menu. A detached tank can only be attached to its platoon again if it is close enough to form a formation with the platoon.

This key on all menus is now **[A]**. It can also be used in every screen of the individual game except the Drone Screen **[F4]**. In the individual game, attached tanks all operate at the Platoon level, following whichever tank



TANK — SUPPLEMENTAL INFORMATION

you are commanding (see page 31 of the manual) as long as your auto-Driver is off. If, for any reason, a tank cannot keep up with the rest of the platoon by staying within a certain radius, it detaches itself from the platoon. You have to bring the platoon back to the detached tank and use the Formation Menu to reattach it.

Page 19 — TANK INFO SCREEN

This screen provides two options: **TECH SPEC** provides a cutaway drawing of the basic M1A1 layout and vital statistics (as best as we know them) for the three MIs and their major foes, the Russian T-80 and T-72 tanks. **GAME CREDITS** lists the creators of this game.

Page 21 — MOVE MENU

You can see what is on the map in the normal menu by pressing **[Spacebar]** or **[S]**. Press any key to return to the normal move map and continue your route planning.

[O] for Orders is now **[C]** for Commands. It works the same way.

Page 22 — COMMANDS MENU

There is a new command, **Guard**. The platoon goes to its destination and stays there until it is directly attacked.

Page 28 — INTELLIGENCE MENU

This menu provides three options: a movable **GRID** to show the exact placement of any spot you choose according to the same coordinates shown on the Drone and other 3-D view screens, **DATA** about the current battle situation, showing the "best estimate" of the enemy numbers and reasonably accurate information about how many units have been destroyed on both sides, and **US CREW INFO** showing the names of each platoon leader and generalized ratings for each member of the tank's crew in their respective jobs. When a tank is destroyed, the tank commander is shown as "killed." Successful crews improve over time.

You can be fairly sure that if you operate the tank in the Individual Game and use the Laser Sight that you are faster and more accurate than the computer.

Definitions of Crew Info Ratings:

C = Commander rating; determines how fast a target is acquired

L = Loader rating; determines how fast shells are loaded

G = Gunner rating; determines how accurate the auto-gunner is

Tank Status: O = Operational, D = Damaged, K = Killed

Ratings: P = Poor, F = Fair, G = Good, E = Excellent



TANK — SUPPLEMENTAL INFORMATION

Page 34 — Exiting The Game changes End Game to Abort Mission. Exiting the game takes you out of the mission without recording a score.

Page 35 — Destroyed Tank

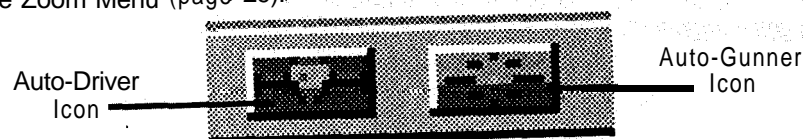
When your tank is destroyed, a message pops up and you are taken to the next tank within the platoon or to the lowest numbered tank in the next platoon.

Page 35 — Damage Status Display

The Damage Report is shown with **[Alt][R]**, not **[Alt][D]**.

Heading/Coordinates Line

The same heading and coordinates that show up at the bottom of the Drone Screen (pages 39-40) also appear at the bottom of the Outside and Trailer Screens (pages 36-37). They also appear in the 3-D mode of the Zoom Menu (page 29).



This line also includes the name of the screen and two icons that indicate whether the tank's auto-driver and auto-gunner functions are in operation. If the icons are not present, the functions are not in operation. **Outside [F2]**, **Trailer [F3]**, **Gunner [F5]**, **Commander's Machine Gun [F7]** and **Turret Topside [F9]** Screens

There is a change in the key commands for these screens. Press **@** to depress the gun barrel. Press **[2]** to elevate the gun barrel.

Page 37 — Turning the Turret cannot be done with the **[←]** and **[→]** keys on an expanded keyboard. Use them as you would the normal arrow keys. You can turn the turret with the **[.]** and **[/]** keys instead.

Pages 41-45 — Gunner [F5]

Firing Smoke Grenades can be done by the gunner. Press **[F]** (for Fire) to shoot the smoke grenades.

Auto-Gunner

When you are not personally firing a tank's main gun, that function is performed by the auto-gunner. Even if you are using the Gunner Screen, the auto-gunner is in operation unless you toggle it off using **[Alt][G]**. Toggle it back on using **[Alt][G]**. The auto-gunner also resumes when you leave the tank.



TANK — SUPPLEMENTAL INFORMATION

Page 43 — Laser Sight [R]

The Laser Range Finder is toggled with **[R]** (for Range), not **[L]**. If it finds a target when you hit **[Enter]**, a small square appears on the screen and the range appears at the bottom of the screen. If a bar appears with the range, it means that the laser has bounced off of several targets, the range given is to the nearest or farthest target, depending on how the toggle is set. If the range finder cannot find a target or hasn't been turned on, an "F" appears on the screen when you hit **[Enter]**.

In the Intermediate and Advanced games, the sight does not follow a moving target. Manually hold the sight on the target for three seconds to get the lock on the target (the center turns red), and then keep the sight on the target to maintain the lock. The tank gun automatically leads to target only when the center of the sight is red.

Pages 46-51 — Driver [F6]

The Auto-Driver

The tank automatically drives itself, either on the path you designated using the Move Menu (page 21) or on the pre-selected path that comes with the mission. When you go to the Driver's Screen, you must toggle the auto-driver off by pressing **[Alt][D]**. When you leave the tank, the auto-driver takes over and attempts to go to the next node (page 21) on the predesignated path.

Low Gear must be selected by pressing **[Alt][L]**.

Page 54 — Commander's Cupola [F8]

Platoon Identification is a readout at the lower left-hand corner of this screen that tells you your tank's platoon number and tank number.

Radio is a box under the right side of the viewport that tells you what communication network you are on. Press **[R]** (for Radio) to toggle between the platoon net (P NET, which just gives you messages from your platoon mates), the company net (C NET, which gets you messages from everyone on your side), and off (OFF, so you will not be distracted with messages).

Resupply is automatic. Drive near the area around a supply truck and stop the tank. It is automatically resupplied with fuel and ammo.

Smoke Grenades are fired with **[F]**, not **[S]**.

Page 57-58 — Ending and Scoring the Game

The scoring system has been enhanced to give you a better idea of how well you did in the individual missions. At the end of a mission, you will see a numerical score and a display showing how you achieved the score.

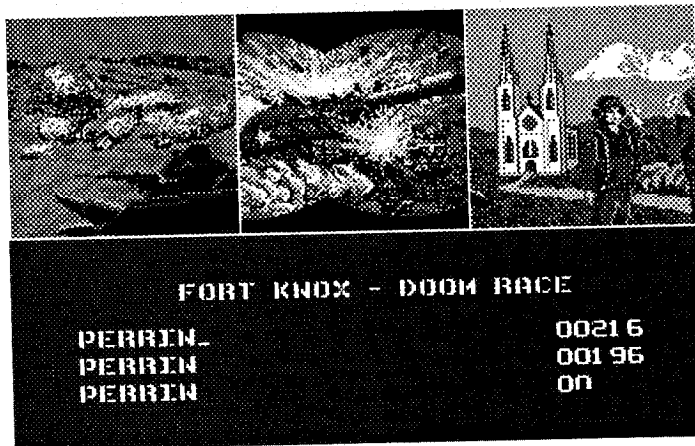
DE UNITS	# INTRACT	POINTS/UNIT	AWARD
AI	0	10	00000
AIH1	1	10	00010
AIH2	0	10	00000
AIH3	0	03	00000
AIH4	0	03	00000
AIH5	0	01	00000
AIH6	0	03	00001
AIH7	0	03	00000
SPECIAL OBJECTIVES AWARDS			00100
SOVIET UNITS	# DESTROYED	POINTS/UNIT	AWARD
T-30	0	10	00000
T-72	1	03	00003
ISU-93-1	0	03	00000
ISU-93-2	0	03	00000
D-30	0	01	00000
IL-28	0	03	00000
SU-26	0	03	00000
TOTAL AWARD			00213

YOU WON, AND THE CATCH IS INTRACT, BUT YOU
LOST TOO MANY THINGS. YOUR EFFICIENCY RATING
IS 53 (HIGH AVERAGE).

The FitRep (actually a Navy term, oops!) for Training Missions has been replaced by the proper term, the Efficiency Rating (or ER). You are given a number grade for the training missions ranging from 1.0 (Unsatisfactory) to 5.0 (Excellent).

For combat missions, a write-up will describe your success or lack of same (you don't get a grade for real life). If you do exceptionally well, your unit can get a group citation of a Bronze Star or even a Silver Star for exceptional accomplishment.

Page 58 — The Award Scoring Screen scores can be erased by going to the DOS prompt and typing **RESETSCO**. This starts all awards records afresh.



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CHAPTER III

Additional Vehicles

In some of the missions, you will find that you have more or different vehicles than you expected. As a rule, additional "tank" units are M3A1 CFVs. They can be used against tanks although they are skinned. Bradley M3A1 CFVs have 12 HEAT rounds (actually TO no Sabot. **Bradley very thin wa and**

You will also find that your Close Air Support can consist of an ~~Apache~~ helicopter as well as A-10s.

Driving Vulcans and Bradleys can only be done from the **F2** and **F1** screens. Screens **F5** through **F9** cannot be used for a M163 Vulcan or a M3A1 Bradley. Unless you disengage the Auto-Driver, they cannot be driven at all. If you disengage the Auto-Gunner, you will not be able to fire the guns manually to any effect. These units are support vehicles to the main focus of this game, the tank. Let the computer run the supporting players; concentrate on the stars of the game.

Specific	Mission	Notes
1. Project A	1. Project A	1. Project A
2. Project B	2. Project B	2. Project B
3. Project C	3. Project C	3. Project C
4. Project D	4. Project D	4. Project D
5. Project E	5. Project E	5. Project E
6. Project F	6. Project F	6. Project F
7. Project G	7. Project G	7. Project G
8. Project H	8. Project H	8. Project H
9. Project I	9. Project I	9. Project I
10. Project J	10. Project J	10. Project J

Sudden Death: The enemy tanks will not be shooting back.

Sudden Death, Doom Race, The Bridge, Defender: You have no Close Air Support ability, but you can call on reconnaissance aircraft in the Intermediate and Advanced games.

The Bridge, Close Assault, Blifrost, Wild Hunt, Blow The Horns: You have more artillery batteries than originally planned.

Red Thunder: You gain a platoon of Bradleys and a two-tank platoon of MIs. Both are short on ammunition.

Asgard: 'You also have a platoon of Bradleys.

Valkyrie: You have an extra platoon of Bradleys. It is not necessary to pick up the pilot. As soon as you find him, a helicopter (not shown in the game) races to the spot, picks him up and the game will be over.

CHAPTER IV

Combat Advice — The Hull-Down Position

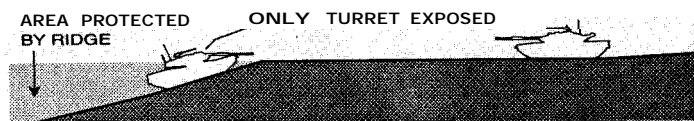
The hull-down position is a standard tactic in tank warfare. It involves putting your tank in a position where only its turret can be seen by the enemy, giving them a much smaller target. This tactic can be emulated in TANK in the following manner.

Put your tank(s) on the top of a slope, where the gunner and driver can barely look over the top of the slope at oncoming enemy tanks. Your gun



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will depress just enough to be able to shoot at them, and then you will be in a hull-down position.



Sabot vs. HEAT

American tanks carry both forms of ammunition because each has its advantages.

Sabot has greater penetrating power at close range, particularly against the enhanced armor found on the T-80 and upgraded T-72s. However, it loses momentum, and therefore penetrating power, at ranges beyond 500 meters. Also, once it penetrates armor, it has less chance of actually destroying its target with one shot because the shrapnel created by the penetrating rod may not hit anything vital.

H.E.A.T. has less chance of penetrating enhanced armor, which is specifically designed to foil it. However, its chance of penetrating depends on the heat of its shaped charge, and this does not change with range. Thus, at long ranges, it has a better chance of penetrating any armor than the Sabot round does. Moreover, if the shaped charge does penetrate armor, the heat and force of the blast has a better chance of destroying a target (particularly an older tank or infantry vehicle) in one shot.

Thus, at really long ranges, 1,200 meters and beyond, use HEAT as a rule for a better chance at a knockout. At anything under 500 meters, use Sabot for a better chance of penetrating armor. For anything in between, use whichever seems to work.

CHAPTER V

Addition to Glossary

Efficiency Report (ER) — the report that a commanding officer uses to evaluate the competence of his men. This report is a permanent record and follows a soldier throughout his career. A bad ER early in an officer's career can influence his entire career.

Hull — the body of the tank on which the turret rests and turns.

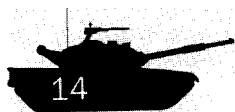
Hull-Down Position — a position in which the tank exposes only its turret and top of the hull to enemy fire, thereby providing less of a target for enemy shells.

TANK — SUPPLEMENTAL INFORMATION



Addition to Tech Specs

The M1A2 (page 126) shown in this game would seem to be more of a speculation than we realized when creating the game. Current specifications for the M1A2 call only for enhanced depleted uranium armor, not the 140mm gun. Apparently those generals who worried about an M1A2 running out of ammunition prevailed, and the newest version of the Abrams continues to carry the 120mm gun. Think of our M1A2s as M1A3s or some further permutation of the M1 Abrams formula.



Five Minutes To Play TANK

This is a quick introduction and walkthrough of the first TANK mission, SUDDEN DEATH.

1. Load your **TANK** game (see pages 1-2 of the manual) and type **TANK** at the prompt.
2. Hit any key to exit the Title Screen.
3. At the Mission Selection Screen, press **[Enter]** to start the SUDDEN DEATH mission.
4. This brings up the Game Configuration Screen; hit **[Enter]** again.
5. This brings up the Select Ammunition Screen; hit **[Enter]** again.
6. Your tank (it's the blue rectangle with an oval inside it) will start moving on its pre-programmed route. You can leave it alone until it reaches one of the red rectangles, or you can use **[F2]** through **[F9]** to see various views in and out of the tank. Note: **[F4]** takes you to a "flying carpet" view that takes you away from the tank. Hit another function key to get back to the tank. If you want to get back to the 'map screen, press **[F1]**.

7. Driving The Tank

If you want to try driving the tank, press **[F6]**, which takes you to the Driver's view. Hit **[Alt][D]** to disengage the Auto-Driver. You'll know you're successful when the "AUTO" sign disappears from the screen. Use the number keys on the top of the keyboard to vary your speed, and press the **[←]** and **[→]** keys to turn the tank. Using these keys, you can drive all over the map until the time limit for the game is up. Press **[F1]** periodically to keep track of your position on the main map.

8. Fighting Other Tanks

Before you reach a red rectangle (which shows the location of enemy tanks) go to the **[F5]** screen. Press **[G]** until the Gun Select Indicator (see page 42 of the manual) points to the Main Gun. Then press **[S]**. This selects Sabot rounds for the tank to shoot. We recommend choosing Sabots because they are more likely to



penetrate a target's armor at any range, although the damage they do once they penetrate is not as significant as that done by a HEAT round. Descriptions of the Sabot and HEAT shells can be found on pages 114 and 118 of the manual.

Once the enemy tanks are within sight (when the rectangles' edges are touching on the **[F1]** screen), go to the **[F5]** screen (also known as the **Gunner's Screen**) and wait for the Auto-Gunner to find the enemy tanks and start shooting. You can sit back and watch the fight from the gunner's sight (or go to one of the other screens) or you can hit **[Alt][G]** to take over control of the gun. If you are going to do this, be sure you hit **[R]** to activate the Laser Range Finder first.

Once the "AUTO" sign is off the screen, use the **[←]** and **[→]** keys to move the turret right and left, and the **[↑]** and **[↓]** keys to move the gun up and down until you have an enemy somewhere near the cross hairs in the center of the screen. (Enemies are brownish objects that don't look like part of the scenery.)

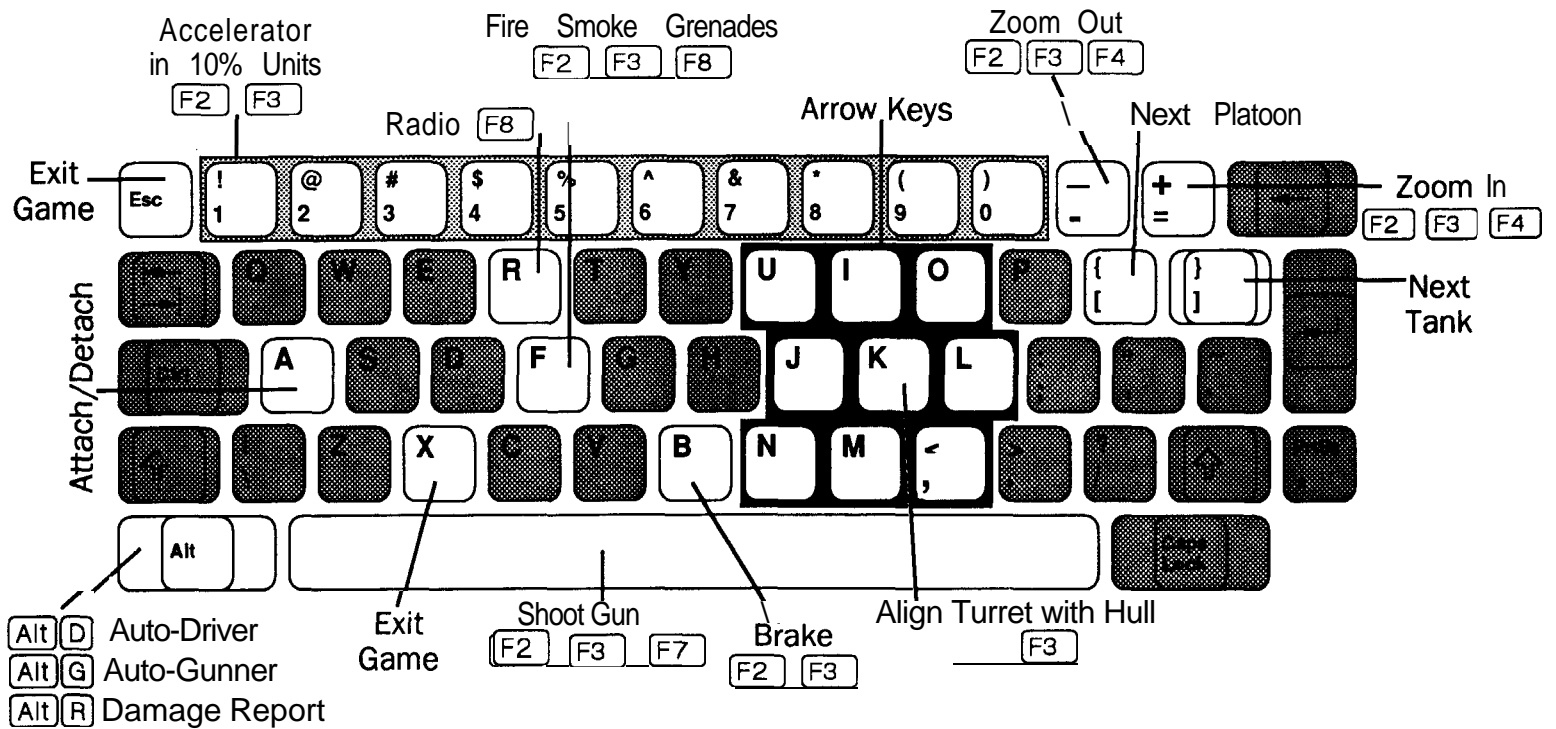
Once you have an enemy in this position, press **[Enter]** to find the range with the Laser Range Finder. If a number appears on the bottom of the gunsight, you have the range. Press **[Enter]** again to lock the sight onto the enemy. If you are successful, the center of the cross hairs will turn red. Then press **[Spacebar]** to fire the main gun. If the enemy is still intact, press **[Spacebar]** again. Remember that a flaming enemy can still fight.

If the enemy seems to be destroyed, press **[Enter]** again to unlock the laser and start hunting around for another enemy (there should be two of them). The quickest way is to turn on the Auto-Gunner with **[Alt][G]** again.

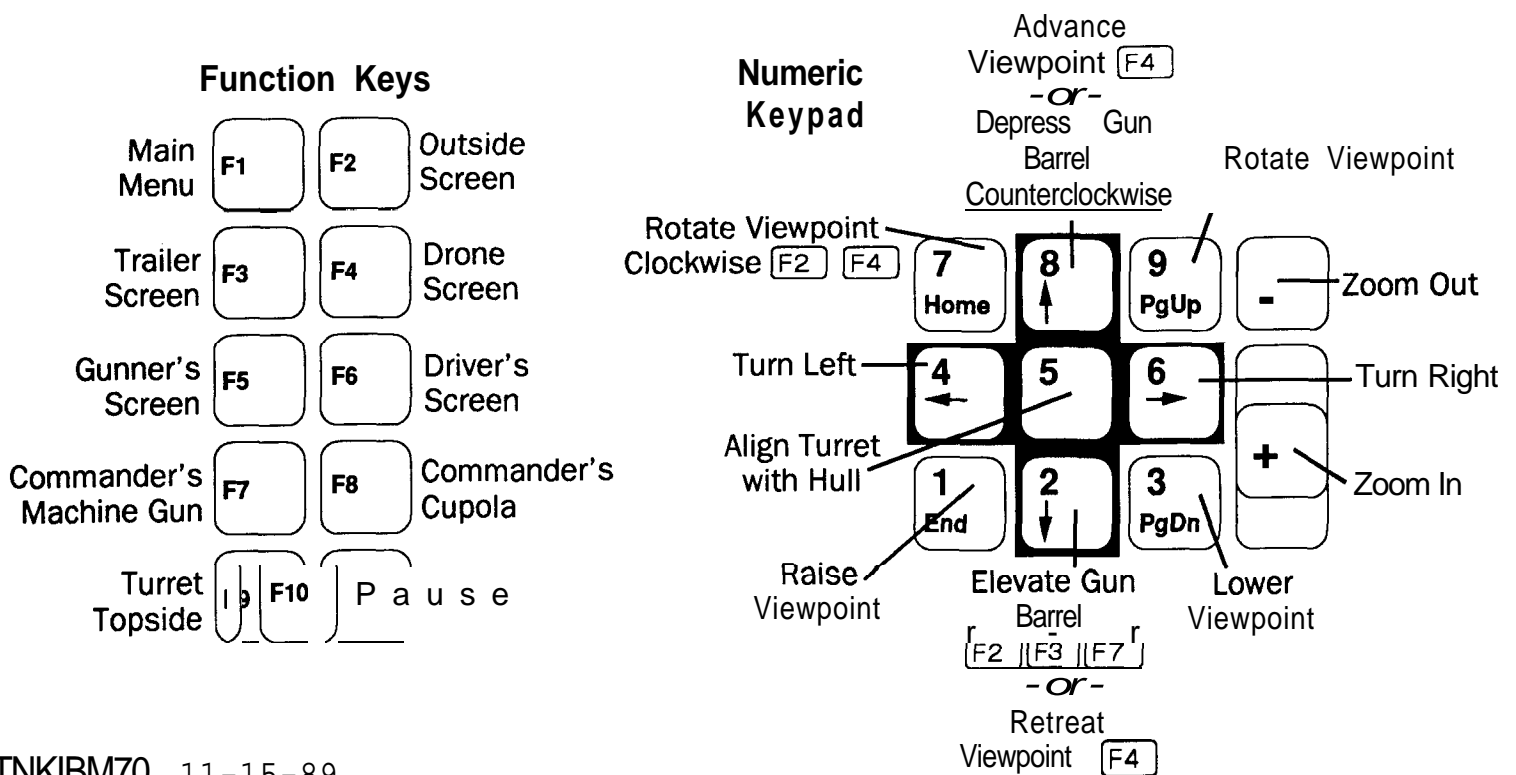
Once you destroy both enemy tanks, read the Mission Description (pages 64-65 of the manual) to see what you are supposed to do with the rest of the mission.

TANK Keyboard Layout for

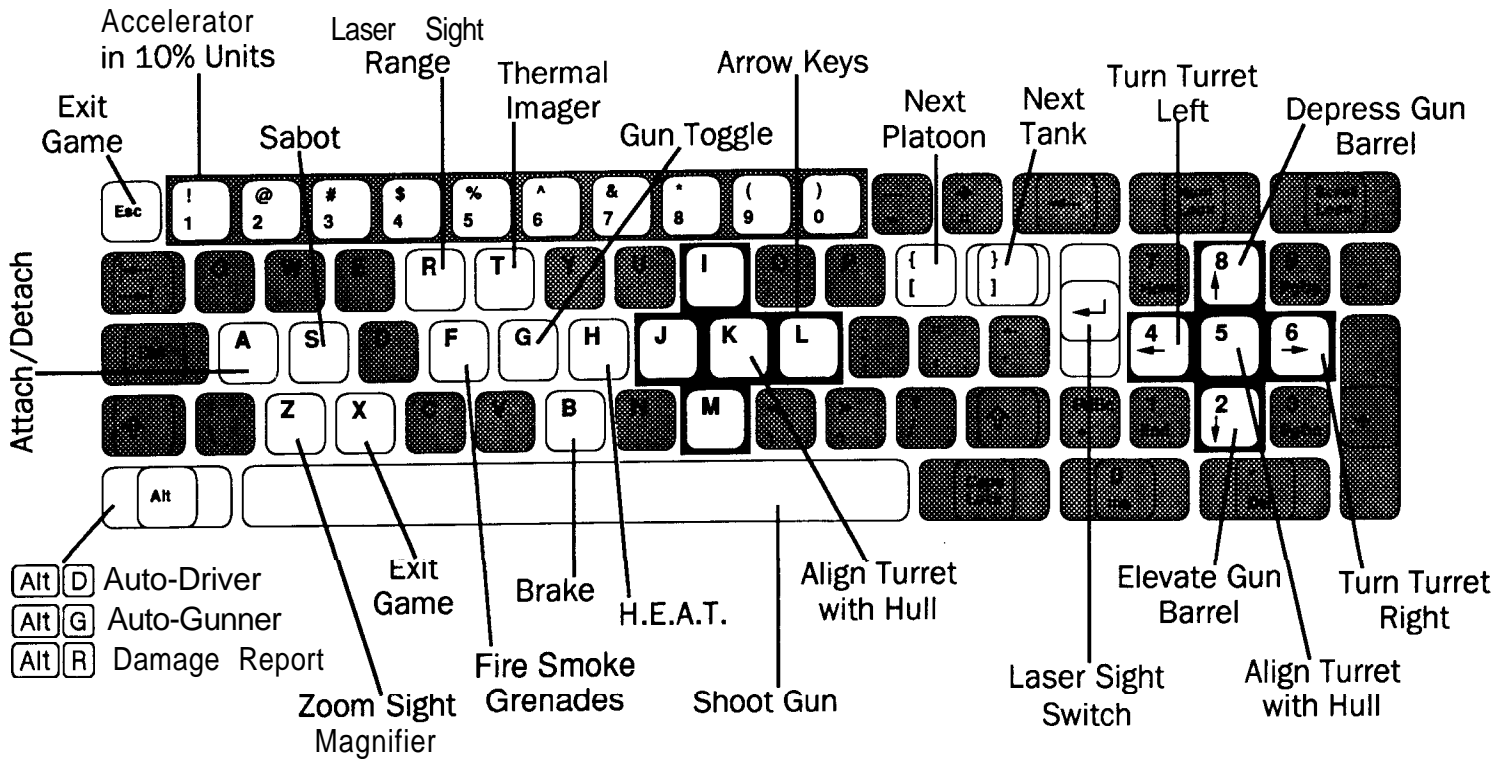
Outside **F2**, Trailer **F3**, Drone **F4**, Commander's Machine Gun **F7** and Commander's Cupola **F8** Screens



TANK Keyboard Layout for Function Keys and Numeric Keypad



TANK Keyboard Layout for Gunner's Screen F5



TANK Keyboard Layout for Driver's Screen F6

