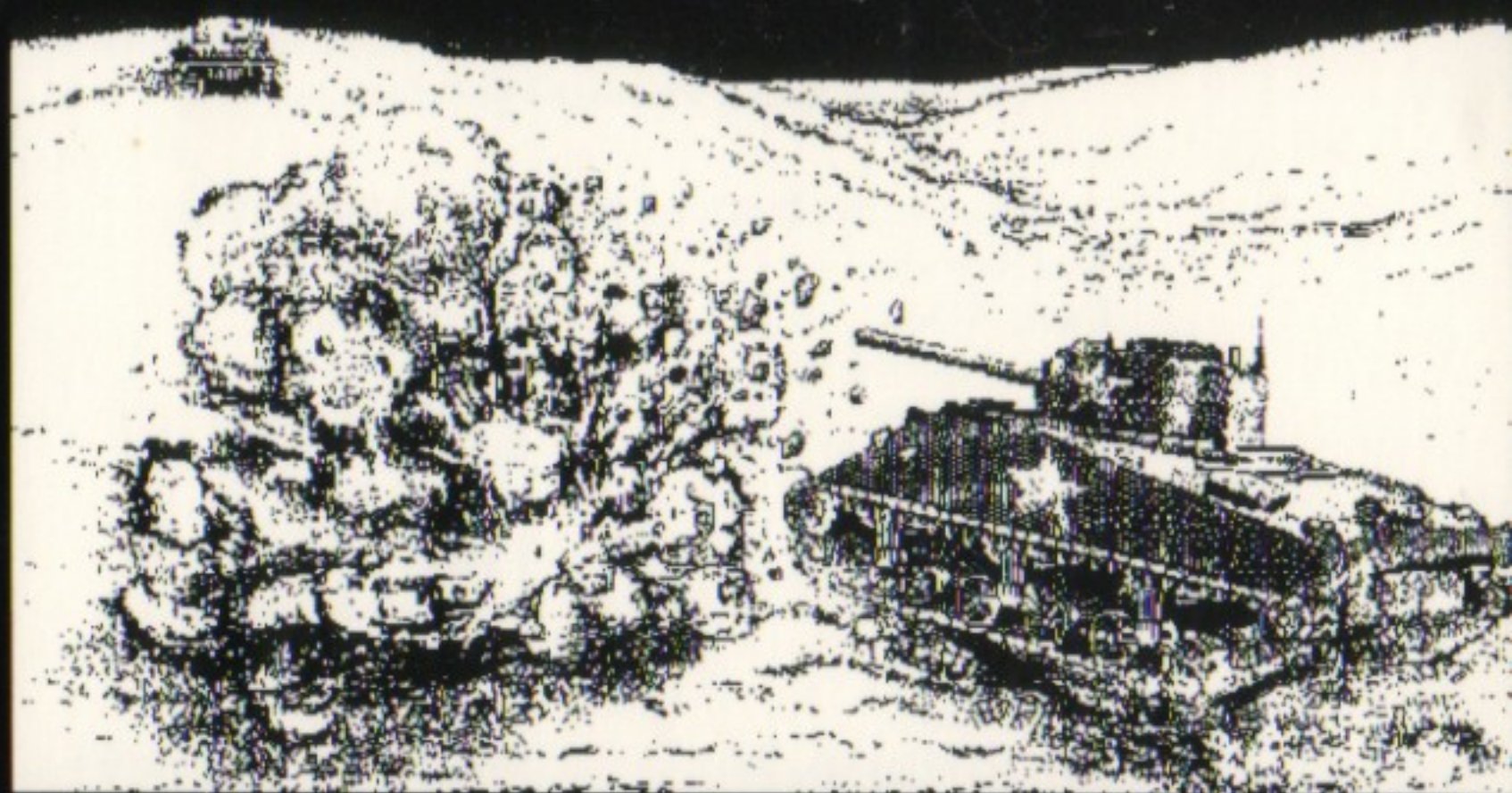


SANDS OF FIRE



OPERATIONS MANUAL



Three-Sixty

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Sands of Fire[™] concept and design by Digital Illusions, Inc.

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If you have questions regarding the use of *Sands of Fire*[™],
please call Three-Sixty Customer Support between the hours
of 9:00 AM and 5:00 PM Pacific time,
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INTRODUCTION

When tanks first appeared on the battlefield during World War I, their primary role was that of supporting the infantry. Often the gains achieved by the tanks were lost, as insufficient infantry could be brought up to consolidate the advances made. Between the wars, tank development continued on varying scales in many countries but official tactics tended to be rooted in the WWI concept. However, Germany was an exception.

World War II became the war of mechanization, and the tank became the symbol of mobile warfare. The Germans used the large groups of tanks in conjunction with infantry, artillery, engineers and air power. However, the Blitzkrieg could only really work against poorly trained and badly led troops whose morale was at a low ebb. When Panzers came up against determined and disciplined resistance they could be contained and mauled by artillery and Allied tanks.

Though light tanks played a relatively insignificant part in World War II, at the start they were the most numerous types in service. The tank was proven to be a decisive battlefield weapon, but the war saw a natural and inevitable growth in counterweapons. As anti-tank capability increased, so did the adoption of heavier armor and the size and the weight of tanks increased. Standardization and reliability were also of fundamental importance in tank warfare — the Americans fought almost the entire war with just two basic models. The Allies learned to build tanks with thicker and better armor and more powerful guns. Before long, they were using guns more effectively, so that German Panzers, while remaining formidable, ceased to be unbeatable.

One of the best advantages the Germans had over their enemies was that Panzer masterminds never bothered with producing "infantry" tanks to co-operate with the troops. One of the surprising disadvantages it experienced was that Hitler's war machine took such a long time to get organized. Any tank losses generally could not be replaced quickly enough, and they were left with shortages.

Despite the lessons of pre-war experiments, the British Army never learned to use their armored formations as separate shock troops. Luckily for the British, large numbers of American tanks became available in 1941. Without these (despite the determination of the men) the North African battles would have had quite a different outcome.

It soon became apparent that one advantage the United States had over most Allies and enemies was that it could gear up its manufacturing capabilities to suit the needs of the moment. The great lesson that American armor taught the world during the war, however, was that successful tanks are those that are easy to maintain and reliable in action.



Tank action in WWII North Africa was fast and violent; units had to be able to react quickly and effectively to unexpected situations. War in the desert was as close to hell as most people ever care to be. The days were scorching, with daily temperatures over 110 degrees, while the nights were freezing cold. The dusty terrain betrayed the movement of tanks, so the dust had to be minimized by slow movement. However, the tank units still had to launch their assault rapidly, regardless of dust. The worst condition was the ever present sand and grit. It clogged noses, parched mouths and ruined all of the equipment.

In the opening years of the war, North Africa was strategically important. It was the Allies' only place to harass the Germans. Additionally, North Africa was important in that by holding Gibraltar and the Suez Canal, Great Britain could ensure the flow of badly needed supplies from the Middle East to England, while thwarting Hitler's and Mussolini's expansionist intentions.

The battle flowed back and forth for over two years with Rommel's genius for tactics overcoming his material deficiencies. In retrospect, the outcome of the war may seem inevitable, but almost everyone involved in the war at the time thought it a touch-and-go situation.

Tank warfare with WWII vehicles is significantly different than that of contemporary tank warfare. The modern U.S. Abrams M1 tank is computer controlled using technical advances in targeting, firing and defense against air attack that bring a new level of effectiveness to modern tanks. These technological marvels take the guesswork out of tank survival tactics. This was not the case on the WWII battlefield, where the rule was close-in, highly-confused combat.

In *Sands of Fire*[™] we are attempting to accurately depict the anxiety levels and immediate danger of the WWII desert warfare. Your tank crew will react to your orders as the tank crews reacted to a real WWII tank commander's orders. The disposition of its target, its range, speed, bearing and relative damage, was a "gut level" calculation the commander had to make. There was no computer to help him make the right decision. If he made the wrong decision, he and his men were dead. In short, the equipment by today's standards was crude, but the dependence on the skill of the commander and driver was much more apparent. In *Sands of Fire*[™], YOU make the difference.

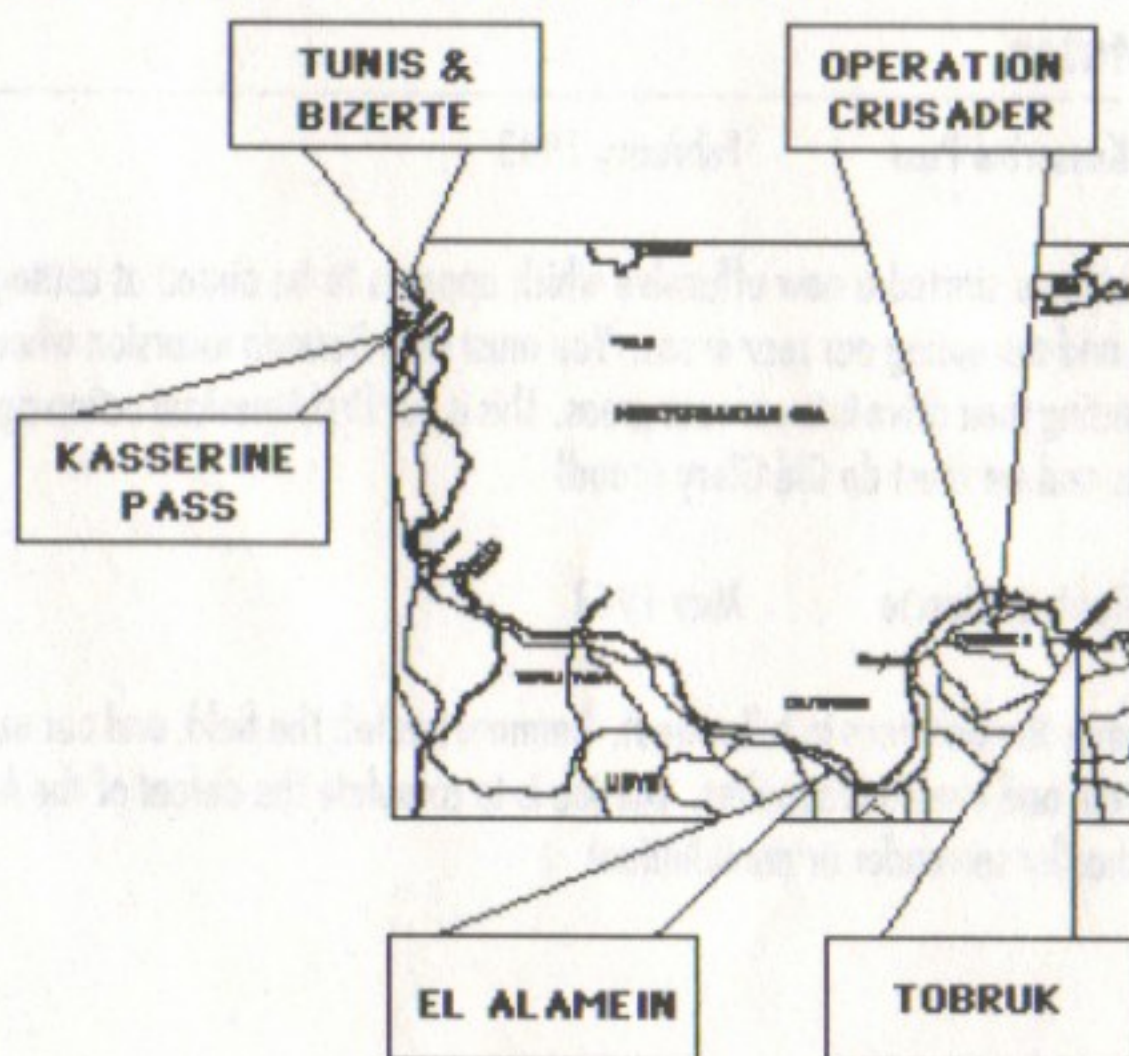


Sands of Fire™ recreates the flavor of small unit tank warfare in the North African desert. You can fight battles as either a British or American commander in any of six different theaters. Each one of our battles is drawn from an actual battle fought during the North African campaign. *Sands of Fire™* should therefore make you frustrated, tense, exhilarated, depleted and above all challenged -- just like a real WWII tank commander.

Your goals while playing are the same as that of any WWII commander:

1. Fulfill your mission objective
2. Kill or disable as many of the enemy as possible
3. Conserve your tanks and use your munitions effectively

The different battle areas of the North African theater are:



Great Britain

Taking of Tobruk April - May 1941

Retaking Tobruk from the Axis is essential to the Allied strategic plan. All German resistance must be overcome!

Operation Crusader November 1941 - January 1942

We are back on the offense against the Germans. Our goal is to crush that pesky Rommel and his forces and relieve our boys at Tobruk. We have men and material superiority over the Germans and should make short work of him!

Fall of Tobruk

May - June 1942

Your job is to hold Tobruk against the Axis hordes. The combined Axis forces have surprised and routed all our Allied forces except Tobruk and we must hold it! This outpost on the Mediterranean is extremely important to the Allied effort. Your stubborn defense gives us time to build new armies to use against the evil Hun.

El Alamein

September - October 1942

We are ready to push the Axis dogs out of Africa. Monty is in command and we have overwhelming superiority in men and machines! It will certainly be a tough fight, but with luck and God's help we should be able to route the Boche.

United States

Kasserine Pass

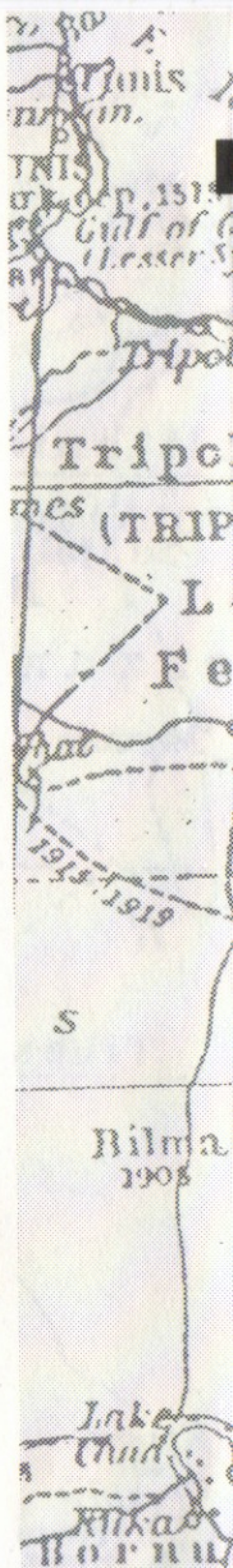
February 1943

The Germans have started a new offensive which appears to be aimed at cutting our supply lines and disrupting our rear areas. You must stop German incursion wherever possible, blunting their drive into our rear areas. This is our first American action against the Germans and we must do Old Glory proud!

Tunis & Bizerte

May 1943

We finally have the Germans in full retreat. Rommel has left the field, and our enemy has low morale and even less supplies. Our job is to complete the defeat of the Afrika Korps, whether by surrender or annihilation!

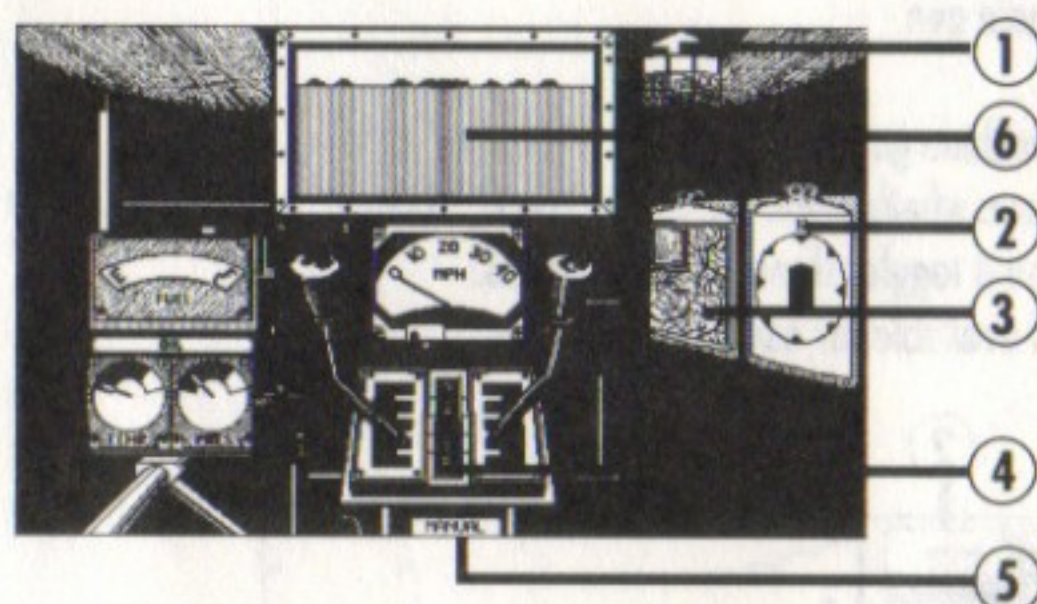


START-UP

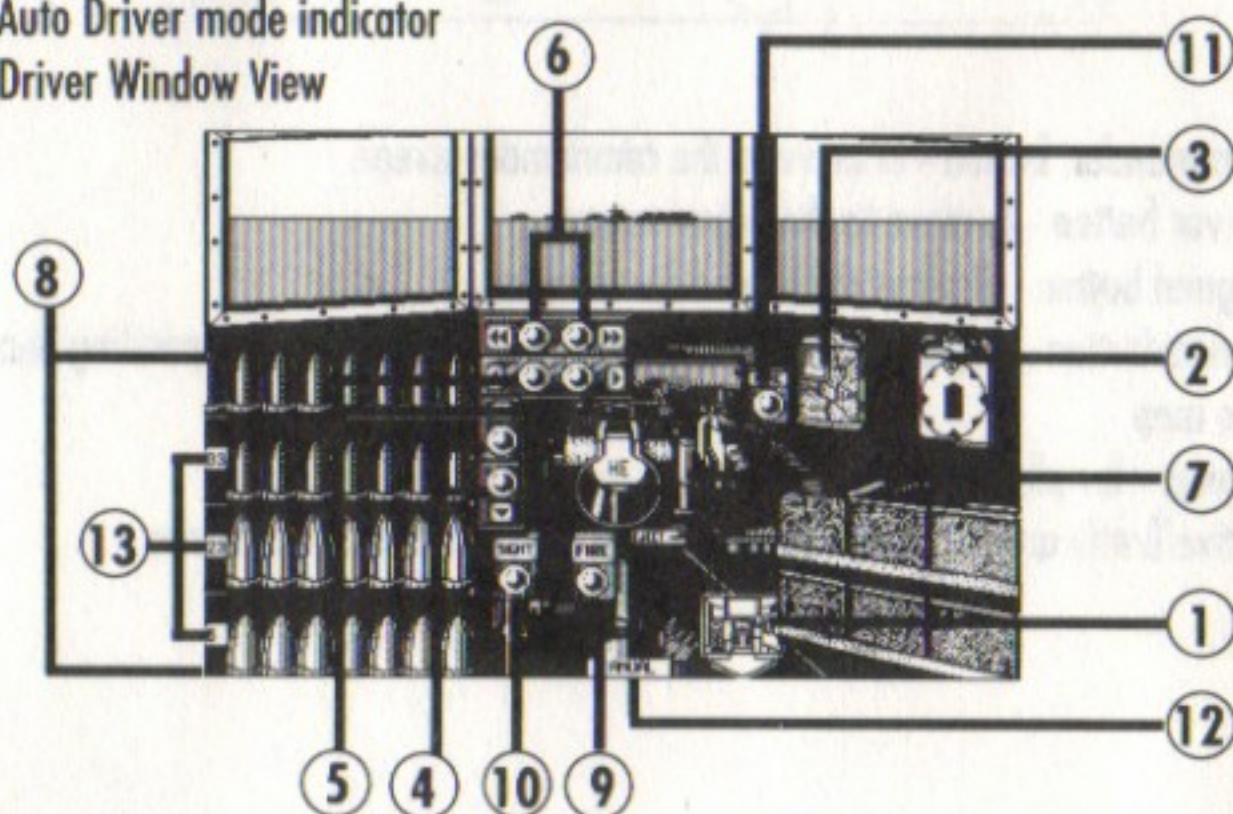
Quick Start

You have several options while learning to play *Sands of Fire*™. You can just dive in and try things out, referring to this manual and quick reference card as necessary. You can also run the demo and watch the action. Or finally, you can read through the manual before you start.

Orientation

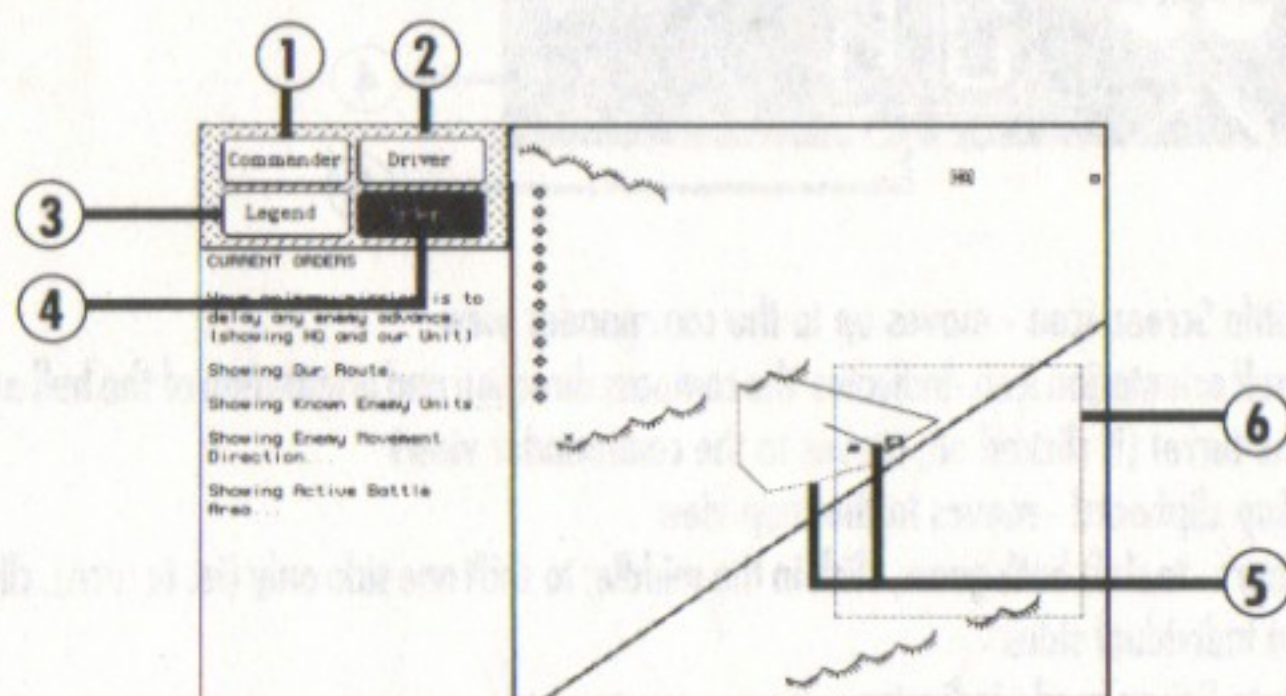


1. Little Screen icon - moves up to the commander view
2. Tank orientation icon - indicates the compass direction and orientation of the hull and the turret (if clicked on, moves to the commander view)
3. Map clipboard - moves to the map view
4. Gears - to shift both gears, click in the middle; to shift one side only (ie. to turn), click on individual sides
5. Auto Driver mode indicator
6. Driver Window View



1. Little Screen icon - moves down to the driver view

2. Tank orientation icon - indicates the compass direction and orientation of the hull and the turret (if clicked on, moves to the commander view)
3. Map clipboard - moves to the map view
4. Barrel up and down buttons
5. Turret left and right buttons
6. Turret left and right pan buttons - same as left and right buttons, but a lot faster
7. Eject/Unload handle
8. Shells - must click on a shell to load that type
 Top 2 rows: High Explosive
 3rd row: Armor Piercing
 Bottom row: White Phosphorous
9. Fire button for main gun
10. Sight button
11. Fire button for machine gun
12. Driver Mode - shows whether you are in 'On Route', 'Retreat' or 'Manual' driver mode. Clicking on it toggles through these choices.
13. Number of shells available for each type of ammo.



1. Commander button - to move to the commander screen
2. Driver button - to move to the driver screen
3. Legend button - displays the legend for the map
4. Orders button - displays the current orders as it flashes the corresponding item on the map
5. Routes - for all tank units
6. Active battle area - all engagements must take place within this area

Apple Menu

Choose this option to see the credits for the game.

Choose this option to run a continuous demo of the training courses.

Training Course

Single Battle Area

Entire Campaign

Load Game

Choose this option to retrieve a previously saved game.

Choose this option to save a game for later. You must have your own blank, formatted disk ready if you intend to save and resume battle areas and campaigns.

Choose this option to exit the program.

Theater Information

Choose this option to see an overview of the present battle area.

Choose this option to see a review of the cumulative statistics for all of the engagements fought by your tank.

Choose this option to see a review of the cumulative statistics for all of the engagements fought by your unit.

Battle Area War Heroes

Choose this option to see a listing of the top commanders and their ratings for that battle area.

North African War Heroes

Choose this option to see a listing of the top commanders and their ratings for that campaign.

Special Menu

Configuration

Choose this option to set sound and animation variables.

Level of Realism

Choose this option to change the realism level (highest - most realistic). This may be changed at any time during the game.

Formations

Choose this option to pick the formation for your unit. You may select from up to nine different formations for the tanks commanded. This should be used frequently during an engagement to adjust to the enemy.

Abandon Tank

Choose this option to abandon your tank and switch to the least damaged tank in your unit. The tank you switch to may not be in any better shape than the one you are abandoning, but it will not be in worse shape. You can check the Unit Statistics to find out what shape the other tanks are in.

Driver Menu

On Route

Choose this option tell the driver to follow our route as shown in our orders.

Retreat

Choose this option to tell the driver to retreat, normally to one of our headquarters.

Manual

Choosing this option gives you manual control, and cancels either the *On Route* or *Retreat* orders.

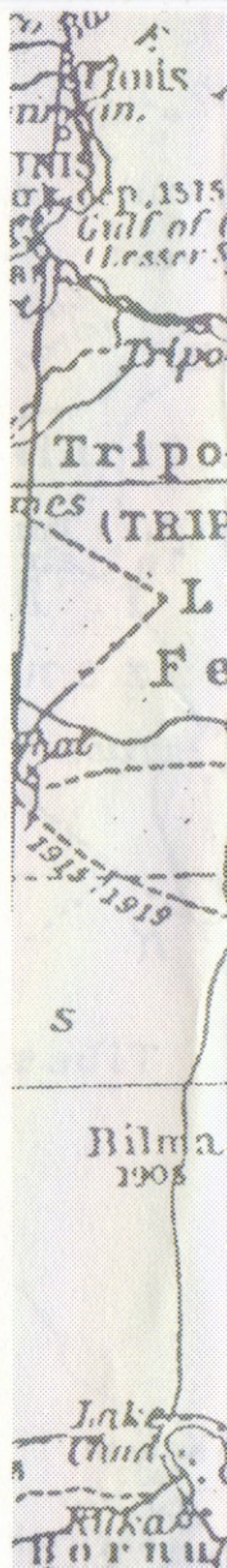
Stop

Choose this option to stop the tank immediately, it also puts you in *Manual* mode.

Game Menu

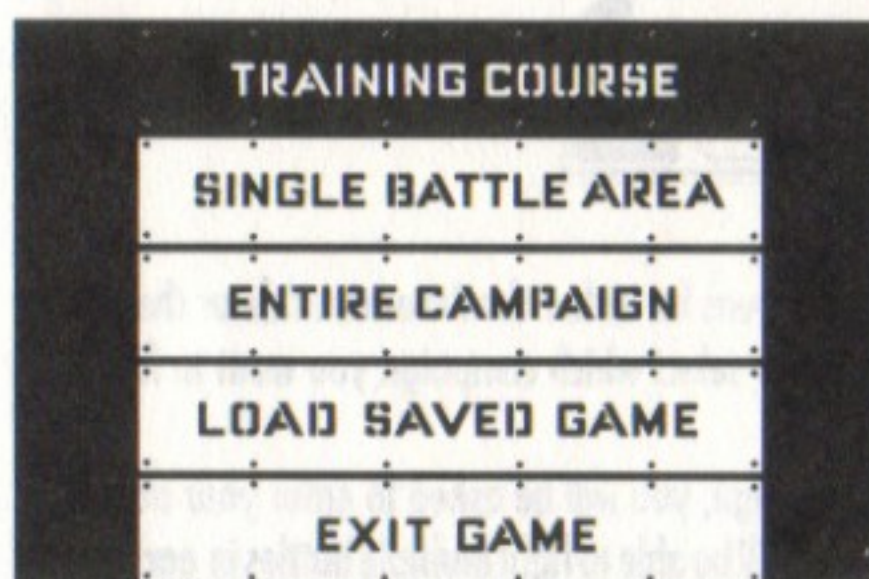
Suspend

Choose this option to suspend play temporarily.



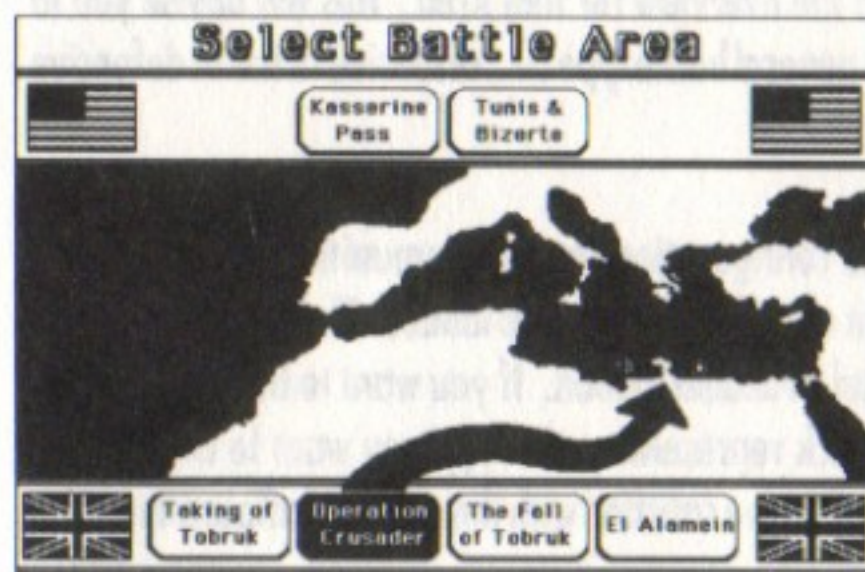
OPERATION OF GAME

You will probably want to have your quick reference card handy. Upon startup, you are given a choice of playing a training course, a Battle Area or an Entire Campaign, loading a saved game or exiting the program.



As previously mentioned, tank units must be able to react quickly and effectively to unexpected or changing situations. The training course is designed to allow you as the commander to master the different tasks in each different tank. Unlike a Battle Area or an Entire Campaign, the Training Course will allow you to choose the type of tank and size of unit you wish to command. As your unit drives the simulated course, different enemy groups will appear so that you learn to identify (and react to) various forces. A rating will be given at the end of the training session, but a permanent record of statistics will not be recorded.

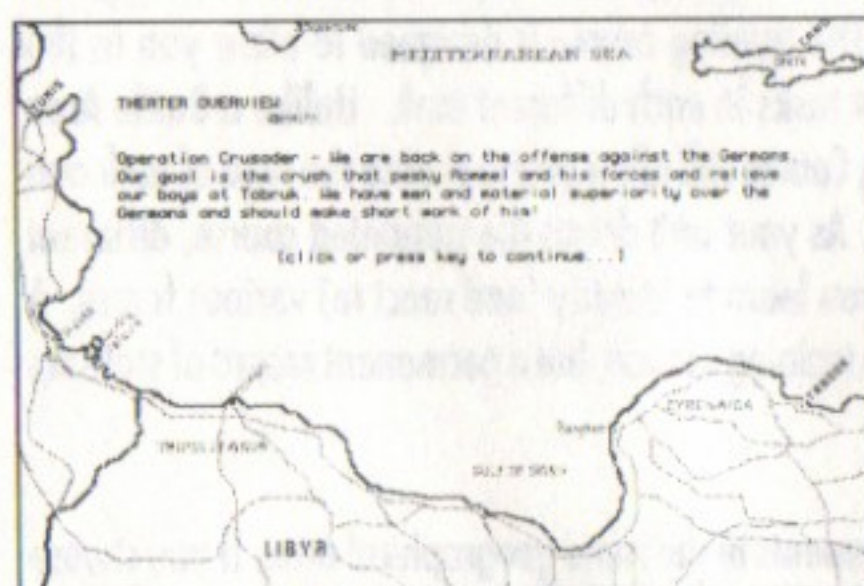
The Battle Area is a series of engagements in the same geographical area. If you choose this option, you must select which battle area you want to fight in.





The Entire Campaign is all of the battle areas for either the American side or the British side. If you choose this option, you must select which campaign you want to fight in.

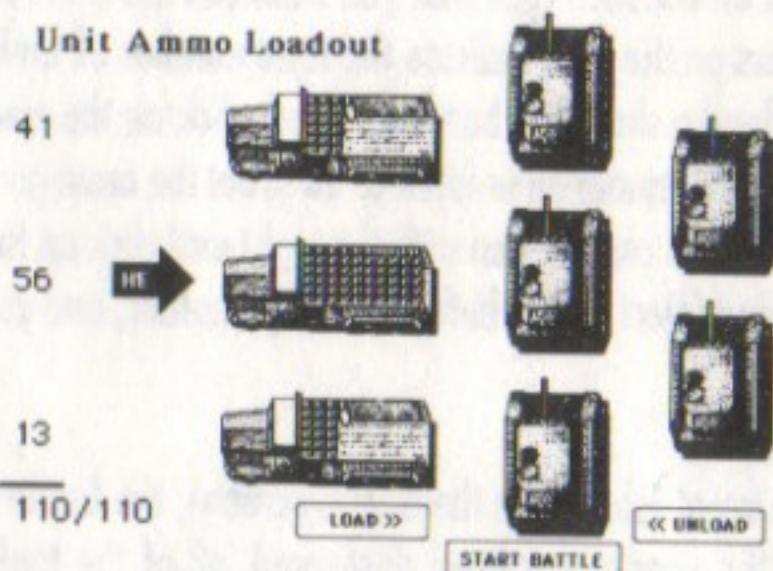
If you chose Battle Area or Entire Campaign, you will be asked to enter your name. If you start a battle area or campaign, you will be able to fight multiple battles in each battle area.



At this point you are presented with the overview for that Area. This will advise you to the importance of the area and your general battle type (ie., offensive strike or defensive action).

Then, you are shown a default load configuration for the ammunition. The numbers beside the trucks indicate the amount of each type of ammo loaded. The bottom numbers show the total loaded versus the total available to load. If you want to have a different number of each type, click on the truck representing the type you want to change and load or unload as appropriate. When you are satisfied with the ammo configuration, click "Start Battle".





You are now given the orders for this battle. You will be shown your route, your HQ locations and the active battle area. You may review these as necessary by choosing the Orders button in the Map view.

You should use the formations appropriate to battle the enemy and achieve your objectives. The different formation types can be selected by choosing Formations from the *Special Menu*.

Finally, you can go to the Driver or Commander view and begin. Note that the view out of the Commander window displays the direction that the turret is facing; while the view out of the Driver window displays the direction that the hull is facing. You can move between screens by clicking on the little screen icon or the tank orientation icon.

To drive the tank, click on the gears in the driver view for the speed desired (if you use the key equivalents, you do not have to be in the driver view). There is an 'AutoDriver' option which will allow you to let the driver follow the assigned route. The 'AutoDriver' may be selected by the *On Route* menu option, clicking on the driver mode box at the bottom of the driver screen or by using the key equivalent 'd'/'D'. Clicking on the individual gears or using the key equivalent for 'Stop' or 'Reverse' will take you out of this mode. Any other driving adjustment (ie., clicking on the center controls or using the key equivalents to speed up) will not take you out of the AutoDriver.

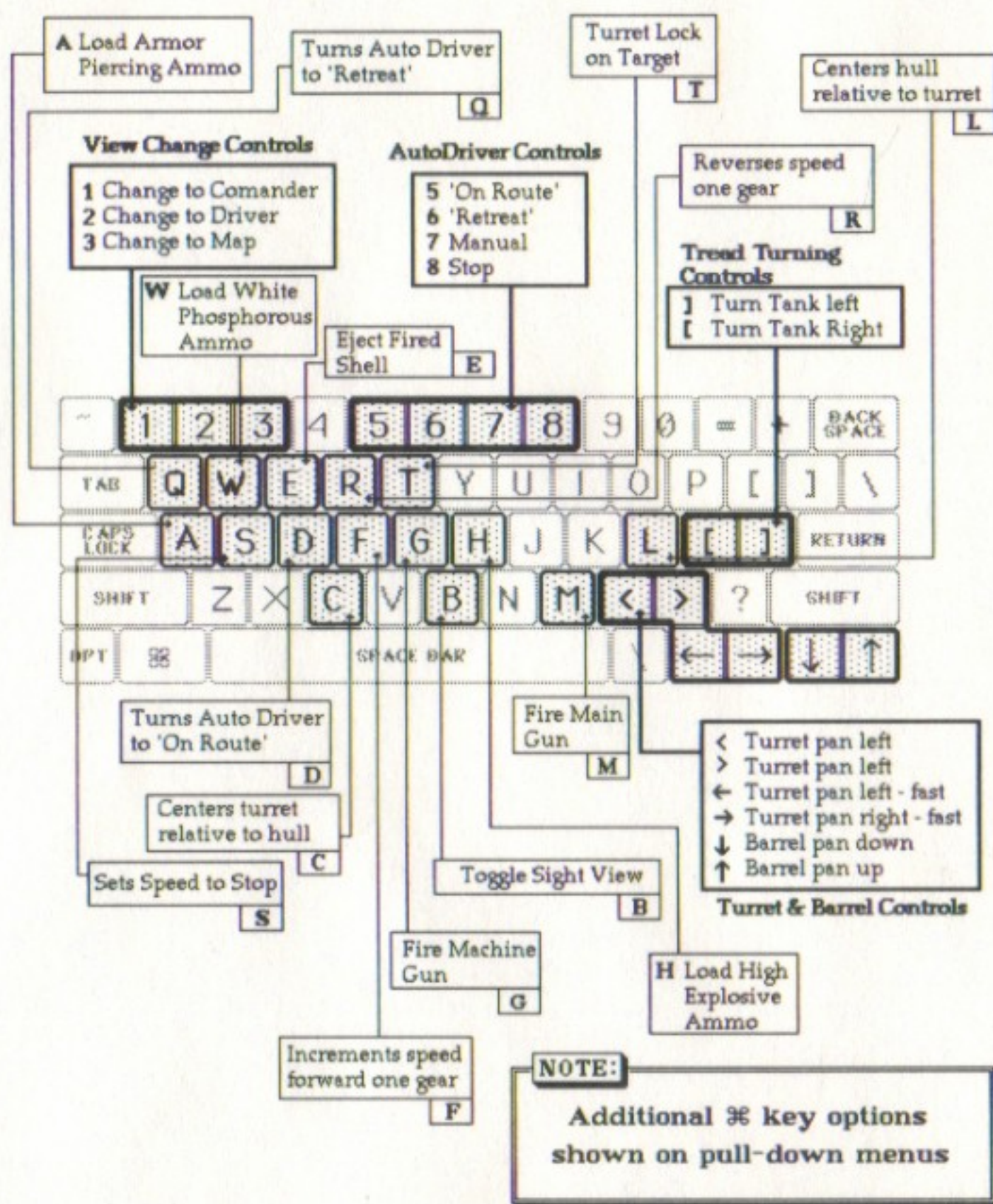
The main gun is employed against targets such as tanks, fortifications, and machine gun type targets beyond the effective range of the machine guns. The machine guns are employed at closer ranges against targets (ie., troops, unarmored vehicles, lightly armored vehicles) and extensively for reconnaissance by fire. The decision to employ the main gun or the machine gun is based primarily on consideration of target vulnerability and range.

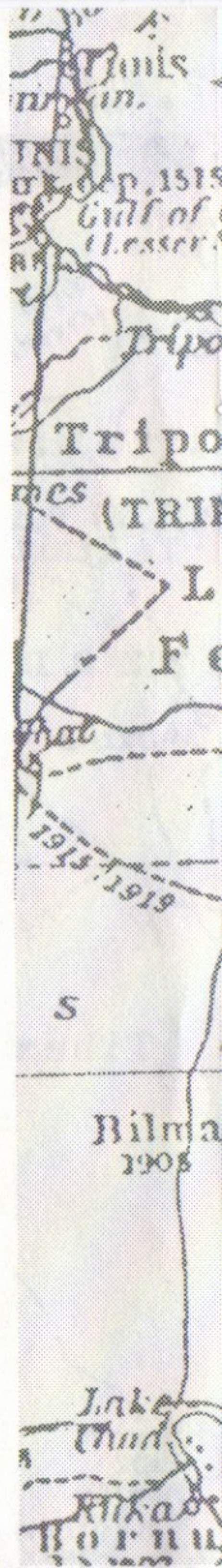
To load a shell into the main gun, click on the shell type that you want (on the racks on the left side of the turret). The numbers on the rack indicate the total number of shells available of each ammo type. To unload a shell that has been fired, click on the eject handle next to the breach. An unfired shell cannot be unloaded. To shoot the main gun, aim at the target using the turret controls in conjunction with the sight and click on the fire button. Remember you must unload/eject a shell before loading another, and you must load a shell before shooting!

When you have left the 'active battle area' (shown on the orders screen), the battle is over. The mission ends when all of the enemy has been destroyed, all of the tanks commanded have been destroyed, or either side retreats past their last line of defense. After each engagement, you will be evaluated on your performance and as a result, may be recommended for various promotions, medals or awards. After the evaluation, you will be able to review the cumulative statistics for all of the engagements fought in that battle area (this will also be available at any time during the game through the menu). If you are wounded during one of the engagements, you will have to "sit out" one or more, depending on the seriousness of the injuries, of the engagements.



KEYBOARD COMMANDS





Thomis
n. in.

THIS
DECEMBER, 1915
Gulf of
Hester

Tripo

Tripo
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L
F

1913-1919

S

Hilma
1908

Lake
Thud

Kikao
Hornu



THE MISSIONS

Types of Engagements

Defensive:

Hold at all Costs - You do not have any backup coming, and high command has ordered you not to give up your position, regardless of the strength of the attackers. All of your tanks are expendable.

Delaying Action - This engagement includes overwhelming enemy forces which you must delay as long as possible to give your side time to bring in reserves to stop the advance. You should use your forces to inflict the maximum damage against your losses.

Offensive:

Probe Front - You are to probe the enemy defenses doing damage against all targets of opportunity.

Breakthrough - You are to break through the enemy lines and engage targets of opportunity, in order to disrupt the rear area units. You will either return to our lines or your break through will be reinforced dependent on your tactical success.

Objective - You are supposed to break through the enemy lines and secure an objective identified in your specific orders. High losses are acceptable as long as you achieve your objective.

STRATEGY & TACTICS

Strategies

Your general strategy when fighting is to keep your forward hull and turret armor towards the enemy as much as possible (it is always the thickest!). You should attempt to engage targets at their weakest armor point and with the right type of ammunition.

Tanks always engage first those targets most likely to interfere with the accomplishment of their mission. While no hard-and-fast rule can be applied, enemy armor commonly offers the greatest threat, and, if present, will be the first target to be engaged. Fast loading and proper target selection is important!

Unless the fire of a tank unit is controlled, you may expend ammunition needlessly and ineffectively. On the other hand, sufficient fire must be delivered to insure destruction or neutralization of the target in the shortest possible time. The way you command your tank determines how the other tanks in your unit will behave. If you waste ammo, then they will waste ammo. If you have a high shooting percentage then they will have a high shooting percentage. In short, they will follow your example. You as the commander must control the correct type, distribution and volume of fire. Wasting scarce **Armor Piercing** shells on soft targets is not advised!

Your strategy will change based on the type of mission you draw. Our recommended strategy for each mission type is described below:

Hold at all Costs - Your best bet here is to keep moving fast, close with the enemy and fire at will. You can't retreat, so you might as well go out in style. Remember that shooting on the move is only effective at extremely close range.

Delaying Action - Once you come into contact with the enemy, keep your tanks in one of the horizontal formations (ie. Line Abreast, Wedge, Refuse Left or Right). Use reverse to back up down your given route, giving ground and damaging as many of the enemy as possible. Pick your targets carefully and keep the enemy at a distance if possible. Remember to keep moving, and change course often to throw off the enemy gunners.

Probe Front - For this type of mission, keep your tanks in a Moving Coil formation until you come into contact with any enemy, then use your judgement on whether to attack or pull a fighting retreat based on their strength. You just want to test their defenses while doing as much damage as possible!

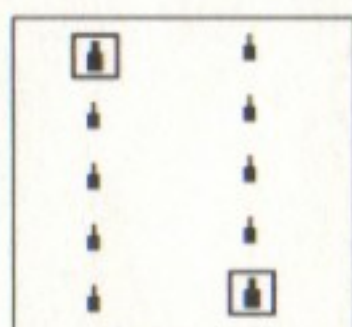
Breakthrough - Here our goal is to break through the enemy so you must keep moving, close with the enemy and pass through his positions, wreaking as much havoc as possible. The more chaos you cause the more likely you are to be successful.

Objective - Similiar to a *Breakthrough*, you must get through the enemy, but the goal is actually to reach a specific objective. Don't let your desire to exterminate the enemy hold you up from your objective, just punch through any enemy forces as quickly as possible and take the objective!

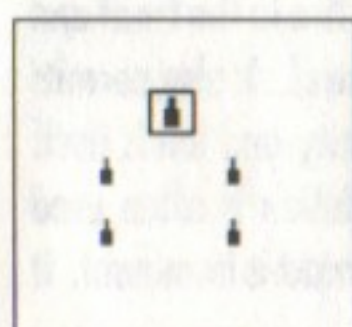
Formations

The tank battalion task force conducts operations in either column or line form, or in some variation of the two. A combat formation is not rigid. Common sense will frequently dictate minor modifications.

A formation with all subordinate units in column provides maximum control, adds depth to the attack, and permits the unit to be deployed to either flank quickly. This formation facilitates retention of the initiative, as the following units can move through or around the leading unit to maintain the momentum of the attack. The following are variations of the column formations that can be employed in *Sands of Fire*™.

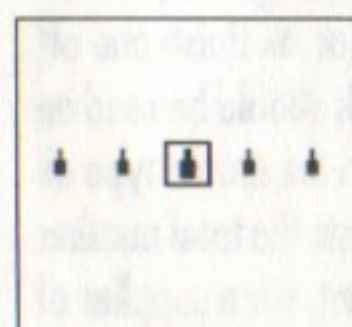


Leading Column and Trailing Column - These formations provide good security and permit maximum fire to the flanks, but permit less fire to the front. They also facilitate control and rapid deployment into any other formations. These column variations are used to approach marches, night movements, fog, and when passing through defiles or dense woods.

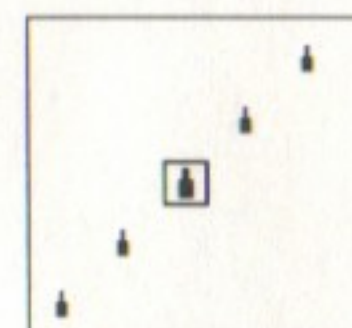


Moving Coil - This formation enables the tank company to rapidly form a perimeter with firepower equally distributed. It is used as a defense or holding formation.

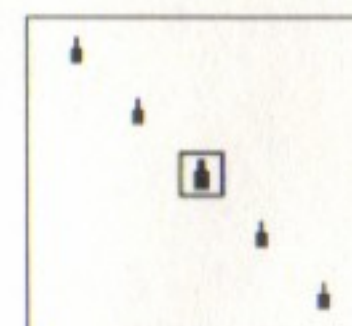
A formation with all subordinate units on line permits employment of maximum firepower forward. In a formation with two or more units abreast and the remaining units following, firepower is reduced, but depth, flexibility, flank security, and control are improved. The following are variations of the column formations that can be employed in *Sands of Fire*™.

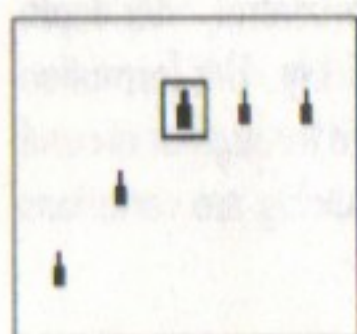


Line Abreast - This formation permits maximum fire to the front or rear and minimum fire to the flanks. It is more difficult to control than a column formation and does not provide as much depth. This variation is used by forces and units in supporting positions. It should be employed by tanks emerging from smoke, crossing crests, leaving woods, and assaulting an objective. Line Abreast permits closing on the objective in minimum time.

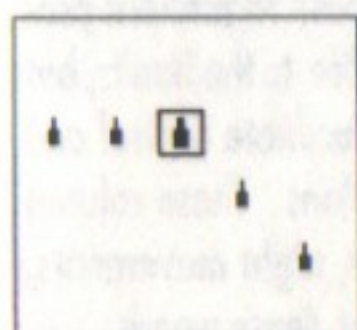


Echelon Left (Right) - These formations permit excellent fire to the front and to the echeloned flank and fair fire to the other flank. They are more difficult to control than a column formation. However, they do permit sustained effort, and are employed to cover the exposed flank of another formation, with a minimum loss of frontal firepower.

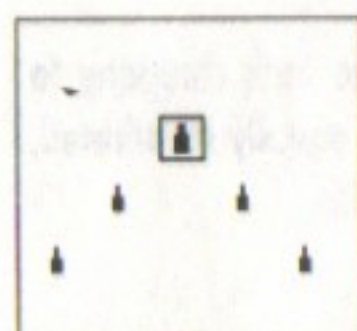




Refuse Left (Right) Flank - At times a platoon leader may desire to protect a dangerous flank without changing the entire platoon formation. On command, three tanks maintain line formation, while two tanks on the dangerous flank fall back in echelon, train guns on and pay particular attention to right (left) front.

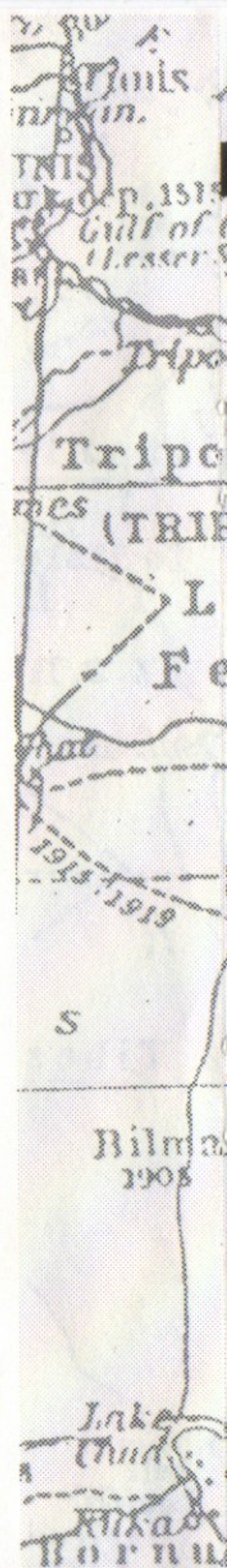


Wedge - This formation permits excellent fire to the front and good fire to each flank and facilitates control. It also permits sustained effort and provides flank security and lends itself readily to fire and movement. This variation is often used when the enemy situation is vague and contact is imminent. It is used as the primary attack formation.



Ammo Type

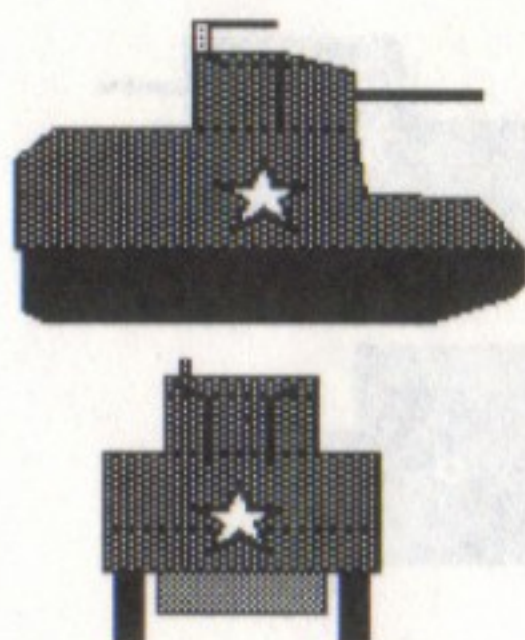
You will be able to choose from three different types of ammo. **High Explosive** shells should be used for soft targets such as lightly armored vehicles, trucks and buildings. **Armor Piercing** shells should be used for other tanks and pillboxes. **High Explosive** can also be used against tanks if you run out of **Armor Piercing** or to finish one off after it has been sufficiently damaged. **White Phosphorous** shells should be used on buildings and light vehicles. The ammo will be loaded by clicking on the ammo type on the racks on either side of the turret. The numbers on the racks indicate the total number of each type available. Using the correct type of ammo is important, since supplies of **Armor Piercing** are normally limited! Also part of your post battle rating is determined by proper usage of ammo.



TARGET LOG

M3 Stuart

Country of Origin: United States
Top Speed: 36MPH
Crew: 4



Dimensions:

Length: 14ft 10.5in (4.53m)
Width: 7ft 4in (2.23m)
Height: 8ft 3in (2.51m)
Weight: 27,400lbs (12,428kg)

Hull Armor:

Front: 51mm
Back: 25mm
Sides: 25mm

Turret Armor:

Front: 38mm
Back: 30mm
Sides: 30mm

Armament:

Main Gun: 37mm MS (L/50)
Machine Gun: .30in Browning
M1919A4 (7.72mm)

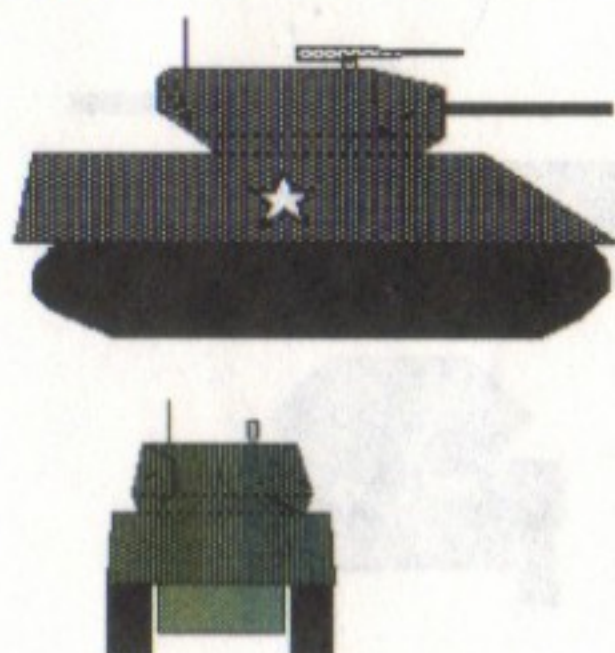
Ammo:

Main Gun: 103
Machine Guns: 8,270

History: Entered service with the US Army in 1941. The M3 was the first American-built tank to be used in action by the British Army during the war. The 8th Army in North Africa recieved its first shipment of 84 M3s in July 1941 and by November the same year 163 were ready for Operation Crusader.

M4 Sherman

Country of Origin: United States
Top Speed: 25 MPH
Crew: 5



Dimensions:

Length: 20ft 7in (6.27m)
Width: 8 ft 11in (2.67m)
Height: 11ft 1in (3.37m)
Weight: 69,565 lbs (31,554kg)

Hull Armor:

Front: 51mm
Back: 38mm
Sides: 38mm

Turret Armor:

Front: 76mm
Back: 51mm
Sides: 51mm

Armament:

Main Gun: 75mm M3 (37.5 cal)
Machine Gun: .3in M1919A4 (7.62 mm) & .5in M2 (12.7 mm)

Ammo:

Main Gun: 97 rounds
Machine Guns: 4,750 rounds & 500 rounds

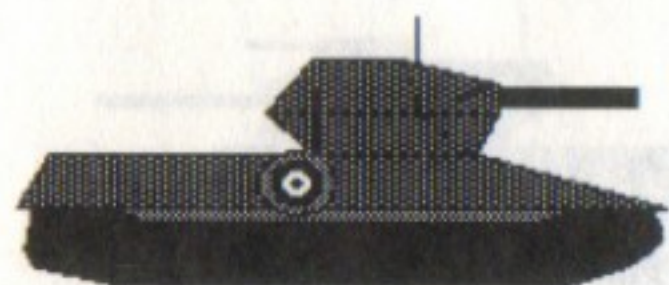
History: Entered service in 1942 and saw extensive service with the U.S. Army and most allied armies during and after WWII. The most prolific medium tank of WWII and widely adapted to other uses.

Crusader Cruiser

Country of Origin: Great Britain

Top Speed: 27 MPH

Crew: 5



Dimensions:

Length: 19ft 8in (5.99m)

Width: 8ft 8in (2.64m)

Height: 7ft 4in (2.23m)

Weight: 42,560 lbs (19,279 kg)

Hull Armor:

Front: 30mm

Back: 28mm

Sides: 14mm

Turret Armor:

Front: 49mm

Back: 30mm

Sides: 24mm

Armament:

Main Gun: Two pounder (40mm)

Mark IX or X (L/50)

Machine Gun: 7.92mm BESA

Ammo:

Main Gun: 110

Machine Guns: 4,500

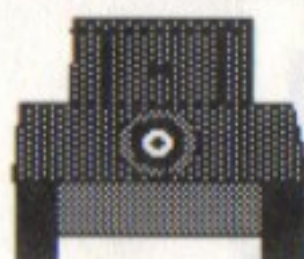
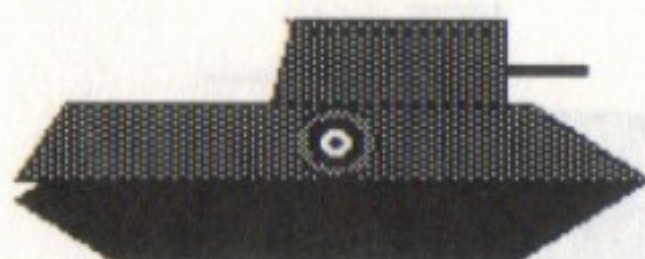
History: In service with the British Army from 1939 to 1943. Plagued by mechanical failure and weak armor, Crusaders nevertheless served in all the major North African campaigns. The 5,300 built were outdated and generally withdrawn by 1943.

Matilda

Country of Origin: Great Britain

Top Speed: 15 MPH

Crew: 4



Dimensions:

Length: 18ft 5in (5.61m)

Width: 8ft 6in (2.59m)

Height: 8ft 3in (2.51m)

Weight: 59,360lbs (26,926kg)

Hull Armor:

Front: 78mm

Back: 55mm

Sides: Right 40mm, Left 72mm

Turret Armor:

Front: 75mm

Back: 75mm

Sides: 75mm

Armament:

Main Gun: Two Pounder (40mm)

Mark IX or X (L/50)

Machine Gun: 7.92mm BESA

Ammo:

Main Gun: 93

Machine Guns: 2,925

History: Served with the British Army from 1939 to 1945. The Matilda was last used as a gun tank in North Africa during the battle of El Alamein in July 1942. After this date it was used for special roles such as clearing mines.



PzKpfw III

Country of Origin: Germany

Top Speed: 25

Crew: 5



Dimensions:

Length: 17ft 8in (5.41m)

Width: 9ft 6in (2.92m)

Height: 8ft 3in (2.51m)

Weight: 42,769 (19,400kg)

Hull Armor:

Front: 30mm

Back: 21mm

Sides: 30mm

Turret Armor:

Front: 30mm

Back: 30mm

Sides: 30mm

Armament:

Main Gun: 50mm KwK 39 (L/42)

Machine Gun: 7.92mm MG34

Ammo:

Main Gun: 99

Machine Guns: 3,750

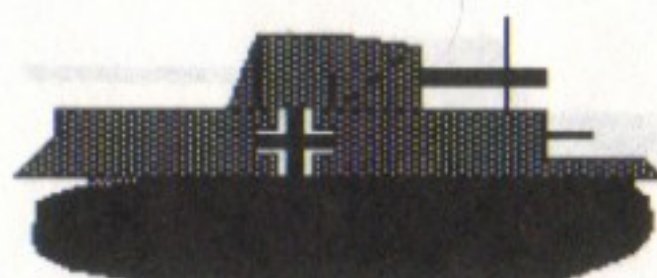
History: In service with the German Army from 1939 to 1945. The PzKpfw III was designed to carry a high velocity gun for anti-tank work. By 1941 there were nearly 1,500 PzKpfw IIIs in service.

PzKpfw IV

Country of Origin: Germany

Top Speed: 26 MPH

Crew: 5



Dimensions:

Length: 19ft 5in (5.91m)

Width: 9ft 7in (2.92m)

Height: 8ft 6in (2.57m)

Weight: 43,431lbs (19,700kg)

Hull Armor:

Front: 30mm

Back: 20mm

Sides: 20mm

Turret Armor:

Front: 30mm

Back: 20mm

Sides: 20mm

Armament:

Main Gun: 75mm KwK (L/24)

Machine Gun: 7.92mm MG34

Ammo:

Main Gun: 80

Machine Guns: 2800

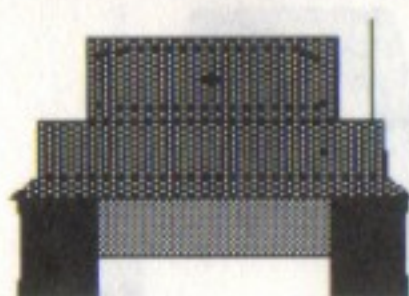
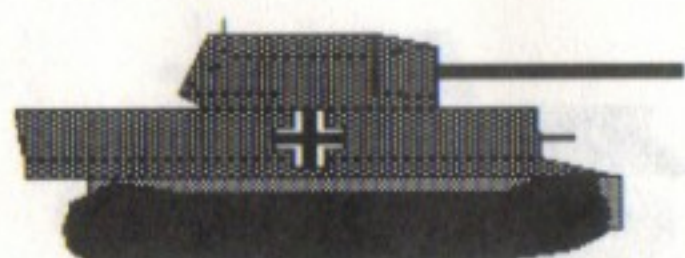
History: In service with the German Army from 1936 to 1945. The PzKpfw IV was the only German tank to stay in continuous production throughout WWII. It was designed to carry a large-caliber gun firing a good high explosive shell to provide support to the PzKpfw III.

PzKpfw VI Tiger I

Country of Origin: Germany

Top Speed: 23 MPH

Crew: 5



Dimensions:

Length: 27ft (8.46m)

Width: 12ft 3in (3.73m)

Height: 9ft 4in (2.85m)

Weight: 121,253lbs (55,000kg)

Hull Armor:

Front: 100mm

Back: 82mm

Sides: 60mm

Turret Armor:

Front: 100mm

Back: 80mm

Sides: 80mm

Armament:

Main Gun: 88mm KwK 36 (L/56)

Machine Gun: 7.92mm MG34

Ammo:

Main Gun: 92

Machine Guns: 5,700

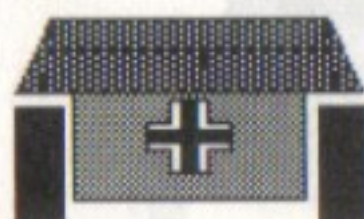
History: In service with the German Army from 1942 to 1945. When the Tiger was introduced, and for some time afterwards, it was the most powerful tank in the world. The 88mm gun was enormously formidable and no frontal shot could penetrate the Tiger's armor.

STuG III

Country of Origin: Germany

Top Speed: 25 MPH

Crew: 4



Dimensions:

Length: 22ft 2.5in (6.77m)

Width: 9ft 8in (2.96m)

Height: 7ft 1in (2.15m)

Weight: 52,690lbs (23,900kg)

Hull Armor:

Front: 80mm

Back: 30mm

Sides: 30mm

Armament:

Main Gun: 75mm StuX 40 (L/48)

Machine Gun: Two 7.92mm MG34

Ammo:

Main Gun: 54

Machine Guns: 600

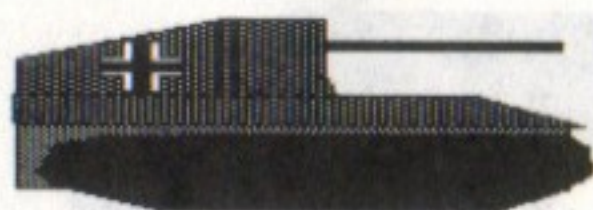
History: The STuG III was introduced in 1940 and fought in all theaters until 1945. It was designed as an armored close-support vehicle and then fought in both artillery and tank destroyer roles.

PzFH18 Wespe

Country of Origin: Germany

Top Speed: 25 MPH

Crew: 5



Dimensions:

Length: 15ft 9in (4.81m)

Width: 7ft 6in (2.28m)

Height: 7ft 6.5in (2.3m)

Weight: 24,251lbs (11000kg)

Hull Armor:

Front: 10mm

Back: 15mm

Sides: 15mm

Armament:

Main Gun: 105mm leFH 18/2 (L/28) field howitzer

Machine Gun: 7.92mm MG34

Ammo:

Main Gun: 32

Machine Guns: 600

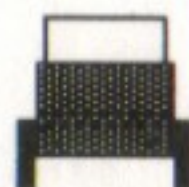
History: The PzFH18 Wespe was a very popular self-propelled howitzer which soon gained for itself a reputation for reliability and mobility.

Jeep

Country of Origin: Germany

Top Speed: 40 MPH

Crew: 1



Dimensions:

Length: 12ft 3in (3.73m)

Width: 5ft 3in (1.6m)

Height: 4ft 5in (1.35m)

Weight: 1400 lb (635kg)

Hull Armor:

Front: 2mm

Back: 1mm

Sides: 1mm

Armament:

Main Gun: N/A

Machine Gun: N/A

Ammo:

Main Gun: N/A

Machine Guns: N/A

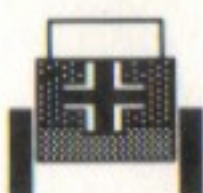
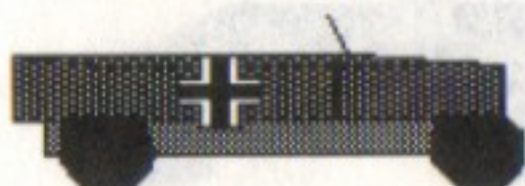
History: The Volkswagen Kubel, designed for lightness and ease of manufacture, had a layout which was very similar to that of the Jeep. It was cheap to build and served wherever the German armies were.

Staff Car

Country of Origin: Germany

Top Speed: 50 MPH

Crew: 1



Dimensions:

Length: 14ft 7in (4.44m)

Width: 5ft 6in (1.68m)

Height: 5ft 8in (1.73m)

Weight: 5302 lb (2405kg)

Hull Armor:

Front: 2mm

Back: 1mm

Sides: 1mm

Armament:

Main Gun: N/A

Machine Gun: N/A

Ammo:

Main Gun: N/A

Machine Guns: N/A

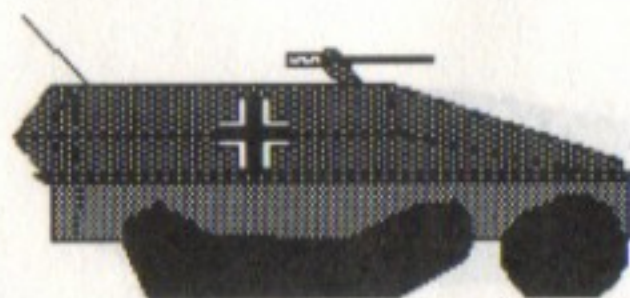
History: The Mercedes-Benz 340 was not a good off-road vehicle due to its long wheel base. Even so, many were used as radio cars, staff cars, and for other special purposes.

SdKfz251 Halftrack

Country of Origin: Germany

Top Speed: 34 MPH

Crew: 12



Dimensions:

Length: 19ft (5.8m)

Width: 6ft 10in (2.1m)

Height: 5ft 9in (1.75m)

Weight: 17,218lb (7810 kg)

Hull Armor:

Front: 12mm

Back: 7mm

Sides: 7mm

Armament:

Main Gun: N/A

Machine Gun: Two 7.92mm MG34

Ammo:

Main Gun: N/A

Machine Guns: 2,800

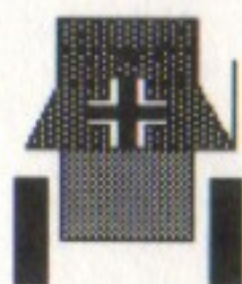
History: The SdKfz 251 Halftrack was primarily an armored personnel carrier capable of carrying up to 12 men. Armed with 2 machine guns the SdKfz 251 was a useful fighting platform capable of keeping up with fast moving Panzer formations.

Scout Car 222

Country of Origin: Germany

Top Speed: 45 MPH

Crew: 3



Dimensions:

Length: (4.8m)

Width: (1.95m)

Height: (2.0m)

Weight:

Hull Armor:

Front: 30mm

Back: 5mm

Sides: 5mm

Armament:

Main Gun: 75mm StuX 40 (L/48)

Machine Gun: 7.92mm MG34

Ammo:

Main Gun: 50

Machine Guns: 2,800

History: The Scout Car 222, a four-wheeled vehicle, was one of many armored cars used to quickly transport several men. Others included six- and eight-wheeled scout cars.

Panzerjager I

Country of Origin: Germany

Top Speed: 25 MPH

Crew: 3



Dimensions:

Length: 13ft 7in (4.14m)

Width: 6ft 7in (2.0m)

Height: 6ft 11in (2.1m)

Weight: 13,228 lb (6000kg)

Hull Armor:

Front: 13mm

Back: 7mm

Sides: 7mm

Armament:

Main Gun: 47mm P&K L/43 3

Machine Gun: 7.92mm MG34

Ammo:

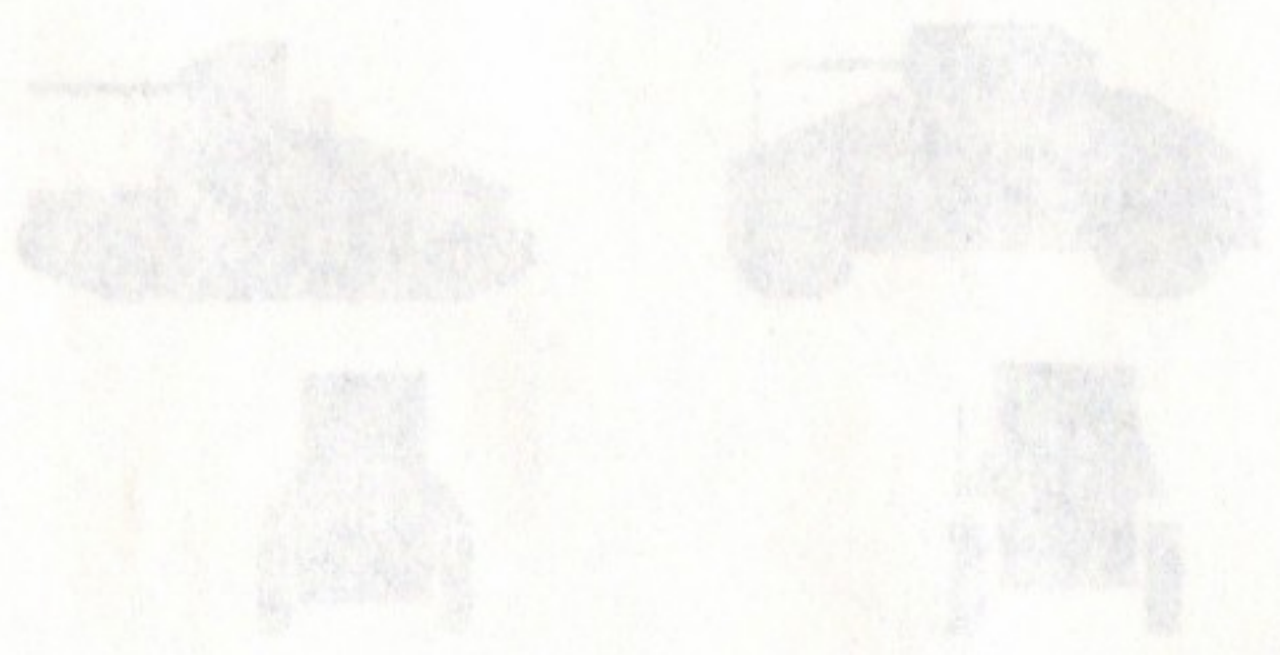
Main Gun: 86

Machine Guns: 3,920

History: The Panzerjager served in North Africa and during the early stages of the campaigns in the Soviet Union. They proved to be powerful enough to defeat opposing tanks, but their overall lack of protection for the crew made them very vulnerable targets.



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Two columns of handwritten notes at the bottom, including a section titled 'History'.

LEGEND OF MEDALS & AWARDS

Great Britain



Victoria Cross - This is the most highly coveted decoration which it is possible for anyone to obtain. The inscription, "FOR VALOUR" is given to those who performed some single act of valour or devotion to their country in the presence of the enemy.



Distinguished Service Order - This is for rewarding individual instances of meritorious or distinguished service in war. No person shall be eligible for the award whose services have not been marked by the distinguished services under fire, or under conditions equivalent to service in actual combat with the enemy.



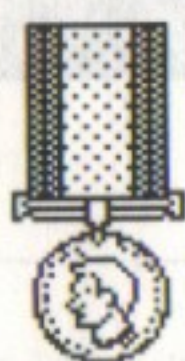
Military Cross - This is an Army decoration. It is awarded to officers not above the substantive rank of major for gallant and distinguished services in action.



Distinguished Conduct Medal - This medal is presented for meritorious service and gallantry in action.



Africa Star - This star is awarded for entry into an operational area in North Africa between June 10, 1940 and May 12, 1943 (the end of operations in North Africa).



Defence Medal - This medal was awarded for three years service in Great Britain until May 8, 1945 or six months overseas in territories subjected to, or threatened by enemy attacks.



War Medal (1939-45) - This medal was awarded to all full-time personnel of the armed forces who completed twenty-eight days service between September 3, 1939 and September 2, 1945.

United States



Medal of Honor - This is the highest-ranked and best-known United States decoration. It is presented to any person who while in the military service of the United States distinguishes himself conspicuously by gallantry and intrepidity at the risk of his life, above and beyond the call of duty . . . involving conspicuous risk of life, the omission of which could not justly cause censure.



Distinguished Service Medal - This is the second highest award of the Army. It is presented to anyone distinguishing himself by extraordinary heroism in connection with military operations against an armed enemy of the United States. The act of heroism performed must involve risk of life so extraordinary as to set the person apart from his contemporaries.



Silver Star - This is awarded to any person — military, civilian, or foreign — who, while serving in any capacity with the United States Armed Forces, distinguishes himself by gallantry in action against an enemy of the US.



Bronze Star - This is awarded to any person who, while serving in any capacity with the United States Armed Forces, distinguishes himself by heroism in surface combat against an armed enemy of the United States.



Army Commendation - This is awarded to any member of the United States Armed Forces who, while serving in any capacity with the United States Army, distinguishes himself by meritorious service or meritorious achievement.



Purple Heart - This is a highly respected decoration of the United States Armed Forces. The decoration can only be earned in one way — by being wounded.



African Campaign - This is awarded to personnel of the United States Armed Forces for service in the European-African-Middle Eastern Theater between December 7, 1941 and November 8, 1945.



American Campaign - This is awarded for service in the armed forces within the American theater between December 7, 1941 and March 2, 1946.



WWII Victory Medal - This is awarded to members of the United States Armed Forces who served for at least one day between December 7, 1941 and December 31, 1946.

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Tripoli

Tunis

Gulf of Tunis

Tripoli

Tunis (TRI)

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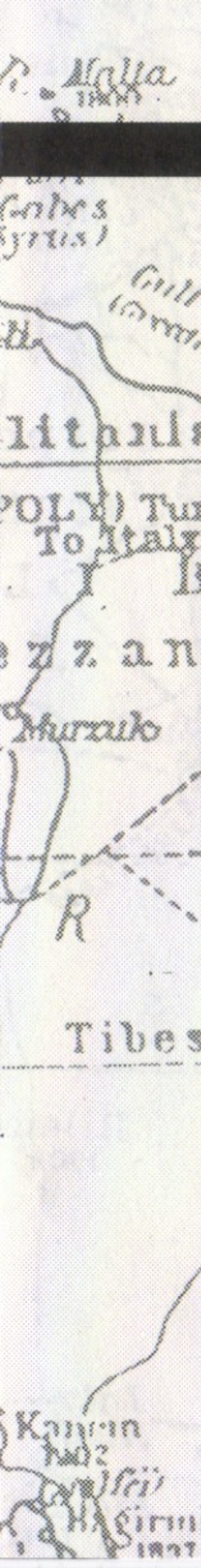
Bilma

1908

Lake Chad

Atka

Bo



GLOSSARY

Armor Piercing Shell - a shell designed to pierce the armor of an enemy tank or the defenses of a bunker.

Battle Area - a series of engagements in the same geographical area.

Blitzkrieg - "Lightning War", the rapid and overwhelming annihilation of the enemy practiced by the German Armies.

Campaign - all of the battle areas for either the American side or the British side.

Coaxial Machine Gun - the machine gun which is mounted on the turret. It always points the same direction as main gun.

Echelon - a steplike formation of tanks.

High Explosive Shell - a shell designed to explode on impact. It is effective against lightly armored vehicles and all soft targets.

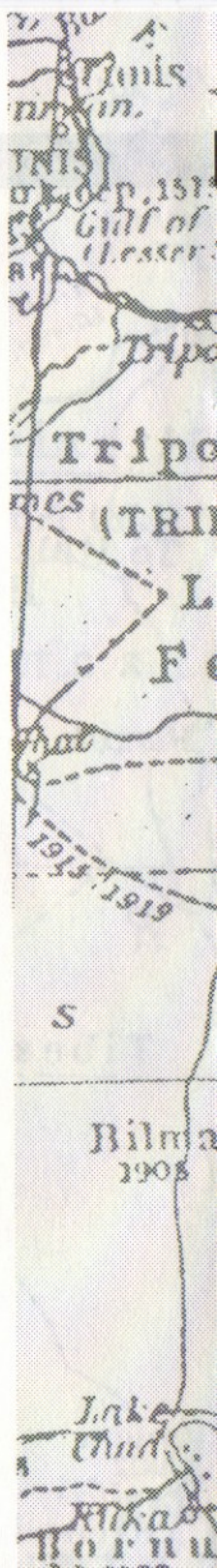
Hull - the main body of the tank.

Main Gun - the primary gun of your tank, used to engage all but "soft" targets which can be destroyed by a machine gun.

Soft target - a target which has little or no armor protection.

Turret - the rotating part of the tank which rests on top of the hull. It contains the main gun, the commander and the gunner.

White Phosphorous Shell - a shell designed to set fire to targets.



Gulf of Lesser

1911

Tripo

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1911

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Bilma

1908

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ADDITIONAL READING

- American Tanks of World War 2 - Terry Gander & Peter Chamberlain
An Illustrated Guide to World War II Tanks and Fighting Vehicles - Christopher F. Foss
Antitank Warfare - Major-General G. Biryukov and Colonel G. Melnikov
Atlas of World War II - Richard Natkiel
Axis Combat Tanks - Peter Chamberlain and Chris Ellis
Brave Men All - Nobel Paul Roth
British and American Tanks of World War II: The complete illustrated history of British, American and Commonwealth tanks, 1939-1945 - Peter Chamberlain and Chris Ellis
British Battle Tanks, 1945 to the Present - Simon Dunstan
British Tanks in N. Africa 1940-42 - Bryan Perrett
Encyclopedia of Tanks - Duncan Crow & Robert J. Icks
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The Foxes of the Desert - Paul Carell
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World War II Tanks - Eric Grove
World War II: Land, Sea & Air Battles 1939-1945 - Christopher Chant, Brigadier Shelford Bidwell O.B.E., Anthony Preston, Jenny Shaw

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