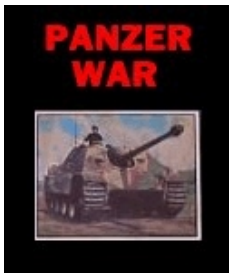

Version 5.21

Panzer War

is a set of war game rules simulating World War II armor warfare that will eventually use a variety of scaled miniatures. Currently it is scaled for 1/285 scaled models. Each player can assume the command of a platoon or company of troops. **Panzer War** includes rules covering weapons, vehicles and troops used during the conflict from 1938 through 1945.
Warfare on and over the battlefield is simulated in a detailed and realistic manner. The scale being one vehicle model for one real vehicle and one infantry stand per infantry squad. The game may seem complicated at first once the basic rules are understood and experience is gained they will become second nature to the players. After familiarizing themselves with the basic rules players should move on to more advanced rules one step at a time.

The overall premise of movement and fire is that the more movement a element does the later in the turn it is allowed to fire (attack) thus moving can be perilous. Movement is based on tactical orders. But orders are not given to individual elements like tanks or squads, they are given to the mother unit like platoons and companies. The individual elements must try to follow these orders as best terrain may allow.

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0.0. Equipment - Besides scale vehicles and troops players must acquire a metric measure, a six side die (**D6**) and at least two ten-side dice (**D10**). Additional equipment such as scale houses, trees, buildings, bridges and terrain boards can be used to enhance the look of the game. It may improve play to use either sand tables, terrain boards or carpet/felt playing surface. Additionally clear acetate overlays may be required to be made of artillery effective areas.

1.0. Scale - While the game was designed to be played in either 1:2000 or 1:1000 ground scale with 1/285 or 1/300 scale models with some adjustments others scales using 15mm or 25mm scale models can be played. All distances are given for 1/285 scale in **Game Scale Units** (**GSU**) so that no calculations have to be made. Players should be familiar with the metric distance system as all measurements are in this system. If the rules say something moves '100' or has a range of '100' then all that has to be measured is 100 millimeters no matter what scale one is playing at. Since models are considerably out of true scale measurements between figures should start from the center of the measuring unit to the edge of the turret or superstructure roof or troop base.
For **10mm-15mm** scale troops the ground scale can be expanded to accommodate their larger size. In this larger scale **1 GSU** would be 1/10th of an inch. Thus when something moves 50 it would move 5". When something is 100 GSU away it is 10.0"

Panzer War is played in turns. Each turn represents the action in 75 seconds of real time. Time between turns is more abstract and is the 'junk' time given to waiting, delays, rest and confusion. This is why a game may that take 12-24 turns (15-30 action minutes) may in fact represent a battle that took several hours.

1.1. Each vehicle, gun or aircraft model represents one such unit. Scale vehicle may be purchased from a number of dealers. There is no basing required for vehicle or gun models other than what is required to handle them.

Squad

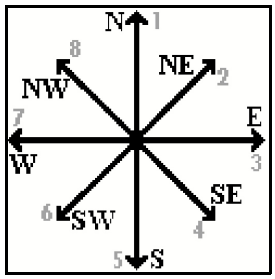
Each squad of 6-12 men is represented by a ½" x ½" counter or chit. Two to four figures can be mounted on these. Teams of 2-5 soldiers or crew operated heavy weapons are also represented by counters with one such model mounted on it. Figures are not mandatory as counters alone can be used, embellished with descriptions or symbols indicating what type or kind of unit it represents.

Team

1.2. The Game area descriptions sometimes include the

term contour level. A contour level represents 6 meters. On a game table is about 20mm in height. The vertical scale and model scale are grossly out of proportion to the ground scale. This is the consequence of using visually pleasing models and doesn't adversely affect the play of the game in most cases. The one place were this may be unrealistic is in city fighting. Often a street will have to be wide enough for a model vehicle but may make it such that troops could not effectively fire across it. In these cases common sense must be used and unofficial stretching is permitted.

1.3. In order to indicate direction on the playing area the compass directions have been broken down into 8 directions.



These are the **cardinal points** and the points halfway between these. From here on we will simply call this the Compass. Directional numbers when given will refer to the directions on this compass. North will always be considered the '1' direction. Alternatively, when computing scatter effects direction '1' would be along the axis of fire.

2.0 Dice and Probability

- Chance plays a big part in the game as it does in war. In the game dice rolls are used to determine if something that has a chance of happening does succeed or not. Generally, the minimum number needed to succeed is derived from tables or charts. Rolling any number higher would also succeed. Ordinarily only a single **D10** or **D6** (depending on the chart) are required to be rolled. However, when a great number of small chance success rolls are needed it is faster and more convenient to roll two **D10** together and call them percent dice (**D100**). One D10 would be the tens dice and the other is the ones dice. (Note in the case of '00' this would be 100 not zero, but a '09' means 9.)

2.1. The **D10** is used to generate to-hit chances as well as randomly selected locations of a hit on a vehicle. When determining success chances the numbers -4 to 15 (a '0' on the die is considered to be 10) can generated. The numbers 1 to 10 can be read directly from the dice roll. Numbers over 10 are called OVERS. Numbers less than one are called UNDERS.

2.1.1. Overs - If a '0' is rolled this can be 'backed up' with a second dice roll. If this second roll is a '6' then the number **11** has been made. If the backup roll is '7' then a 12 is made. An '8' is a 13. A '9' is a 14. If this second roll is another '0' this equals a roll of 15, the highest roll possible.

2.1.2. Unders - If a '1' is rolled this can be 'backed up' with a second dice roll. If this second roll is a '5' then the number 0 has been made. If the backup roll is '4' then a -1 is made. A '3' then a -2 is made. A '2' is a -3. If the second roll is another '1' this equals a roll of -4, the lowest roll possible. Infantry kill-power and high explosive kill-power are numbers that need a D10 to be rolled equal to or less than the specified value.

2.2. The **D6** roll is be used to determine penetration adjustments, vehicle damage or crew or squad morale. When rolling a D6 the numbers from 1 to 9 can be made. The numbers 1 to 6 can be read directly from the dice determined by the number of pips on the die. If a number greater than 6 must be made then a '6' must first be rolled on the die. A second die then is rolled. If this second die is a '4' then a 7 has been made. A '5' is a 8. And a second '6' equals a score of 9.

2.3. Sometimes the rules indicate two possibilities having a 50:50 equal chance of either being the case. This is sometimes noted by two numbers separated by a slash as in (4/5). Roll either a D6 or a D10 with the lower half of the die numbers being the first case and the high half indicating the choice is the second case.

2.4. When a great number of low odds chances must be made use one of the Aggregate Chance tables. These are a table of numbers showing the average percent chance of a number of successes cross-referenced by the number of attempts. This is where the D100 comes in.

2.5. The game uses the principle of determining a threshold success score by adding many variable factors to get a total threshold score. A success would be to roll a die to make or better that score. Usually adjustments (up or down) are not made to the die roll number.

3.0. The Turn - The game is played in turns. Both players may move and have combat in the same turn. Each turn represents actions done in a set period of time (about 75 seconds). Turns are sequential, thus actions done in previous turns happen before actions done in following turns. Within a turn actions sometimes are divided by type of action rather than the time the action actually takes place. It may be necessary, within a single turn, to go back in time to resolve certain situations. All this is handled by the turn phase sequence.

3.1. Each turn is divided into phases. Some phases are further divided into segments. Players do not alternate turns or phases, however, play in each segment is divided by players (or teams) in order to ease and regulate play.

3.2. Turn Sequence

A. Tactical Orders Phase - Tactical orders must be determined at this time. Each unit must receive a new or maintain an old set of orders. Units without orders do nothing.

Sequence of Play - Outline
A. TACTICAL ORDERS PHASE
B. COMMUNICATIONS PHASE
C. MOVEMENT PHASE
1. Aircraft /Infantry First Movement Segment.
2. AFV Close-up / Unbutton Segment
3. AFV Full Movement Segment
4. AFV Half Movement Segment
5. AFV Shift Movement Segment
6. Aircraft /Infantry Second Movement Segment
D. SIGHTING PHASE (Primary)
E. COMBAT PHASE
1. Stationary Fire Segment
2. Shift Movement Fire / Old Artillery Segment
(2a. Auto Sighting of First Firing Elements Seg.)
3. Half Movement Fire Segment
4. Full Movement Fire Segment
5. Close Assault / New Artillery Segment
F. SIGHTING FIRING ELEMENT PHASE (Final)

B. Communications Phase - To issue new orders, change orders and request support, units must communicate with other units. Most local communications are automatic, but communications to units above the company level may not be.

C. Movement Phase - This phase is divided into several segments. Aircraft and infantry movement is in two segments separated by several vehicle movement segments. Vehicle movement is structured so that those units moving the most in a turn must go before those moving the least. (One reason why orders are so important is that movement amount is committed to by the orders.)

Example: If orders given a platoon were to hold in place and after the full movement segment suddenly enemy tanks were moved to positions on all sides, that platoon could not decide at that time to move away. It would have to wait until the next turn to issue that order.

D. Sighting Phase - This sighting phase is to sight new targets that have moved into sight or that could possibly be sighted just by being where they are.

E. **The Combat Phase** This is the most complicated phase. It is divided into 5 segments numbered appropriately 1 to 5. Combat is defined as one player's piece or unit attacking another player's piece. To attack one must 'fire' at the other unit. Who fires (attacks) first is usually given to the one who moves the least. Thus stationary or bore sighted systems will fire before full moving units. Fire within a combat segment is simultaneous. Fire in lower numbered segments takes place before that in higher numbered segments. Separating two of the fire segments is a combat segment. This is reserved for the automatic sighting of elements who fired in the first two segments.

F. Sighting Firing Phase - This second sighting phase exists only in order to attempt to sight units that have fired in the Combat phase.

E. Battlefield Moral - If losses have been taken or communications broken there may be a need for a morale check. The integrity of a unit will determine if it continues with its mission or falls back. Morale failure in one organizational unit may work its way up the chain of command as more sub-units are lost.

H. Final Details - This phase ties up all the miscellaneous rules such as gun clearing, smoke/dust removal, battlefield repair, bridge building or demolition.

3.3. Scenario Goals - A game that is a situation set up with certain limitations on troops and vehicles over specific terrain is called a scenario. A game scenario may be set to last a certain number of turns or it may be limited to a set amount of play time for a team to achieve a set of goals or objectives given by the scenario. A scenario will have two sides, each side will have at least one player. Several players can be on the same side, in which case they constitute a team.

4.0. Command - In order to achieve the goals set forth in any scenario it is necessary to put together a general plan of action. This plan should be simple enough for all players on a team to understand and remember. (Since this after all just a game and there is no court marshaling allowed, it may be a good idea that they all somewhat agree on the plan.) Players must issue orders that are justified by this plan.

Note - 'Units' in Panzer War means organizational units like platoon, company or battalion. 'Elements' in Panzer War means squad, crew, tank, gun or vehicle.

4.0.1. General orders are issued to units that contain other units (not elements) as the next lower level organization. These orders determine the what and the how that all the companies and platoons within that structure will try to accomplish. These orders direct the units to go some place or to hold some piece of real estate. They can be verbal or just ***arrows*** on a map but in all cases they must be justified by the plan.

"The company is employed in accordance with the battalion commander's plan. The company commander bases his plan upon the mission assigned in the battalion order.

One of the most effective means of coordinating the efforts of the company is by the assignment of successive objectives to attacking platoons. Each platoon should be assigned, as its initial objective, the nearest terrain feature . . . whose capture is essential to the further advance of the company as a whole."

4.0.2. Tactical Orders (TO) - The tactical orders are given to units that contain elements as their next lower level of organization. These are primarily designed to govern movement. They are not so much to govern how a unit or element chooses to attack or not attack during the turn. That is left to the situation at during the combat phase of a turn. A commander need not tell a unit to 'fire' or 'halt fire' during the command phase of a turn.

4.0.3. In a given scenario general orders may not be changed for Soviet or any minor axis or allied troops. US and British from 1944 on, German 1940 - 1943, and in some scenarios later may re-issue battalion level orders within the course of the game.

4.0.4. In order for a player (commander) to change from one tactical order to another the organizational unit of company or higher must have a command element. (Platoon commanders are also required for British, German and American units.) The command element will be a vehicle for AFVs or a leader counter for infantry. If this element is eliminated during play a new leader element must be selected (by the player) in order for the player to issue his troops new tactical orders. Unit leaders must be selected in descending orders of command.

4.0.5. DOCTRINE - The type of orders will depend on the type of doctrine a nation's army adheres to. There are two general types of doctrines practiced. The first one is called the ***Art of War*** doctrine or type '**AoW**' for short. Many western armies, including German, American and British attempted to practice this doctrine. It allowed for greater flexibility for the individual tactical commander. However, without good tactical leadership tactical units sometimes worked at cross purposes. The AoW issues tactical orders to each platoon.

4.0.6. The other type of doctrine will be called the ***Science of War*** doctrine or '**SoW**' doctrine. This doctrine sees warfare as a science not an art. Tactical commanders are given very little flexibility as that is reserved for the operational level commanders. The Soviet army used this type doctrine. Actually, there are some that say the British used this doctrine (with their 'drill' training) as much as they did AoW. The SoW issues tactical orders to each company.

4.1. Issuing Orders - When engaging in possible combat situations tactical orders must be issued

4.1.1. Orders issued to companies may not be changed more often than every other turn.

4.1.2. Orders issued to platoons may be changed every turn provided there is tactical justification to do so.

4.1.3. Units that have suffered a moral loss will have their orders given to them by the Morale Failure Results table. These forced orders supersede all player/team tactical orders. This is cannon.

4.2. Tactical Orders - Panzer War is meant to be a **simultaneous** movement game. That is for the most part movement of both sides can be done at the same time. The orders given should anticipate what the other side can do in the turn, not what they just did in their turn as in an IgoUgo system. In order to facilitate this each unit must be have a rigid tactical order each turn. There are eight tactical orders permitted. They are: Advance, Rush, Bound, Charge, Engage, Overwatch, Regroup, and Withdraw. These normally are issued by a command element. All units in the command must carry out these orders unless prohibited by game rules.

4.2.1. Only one tactical order may be given a unit at a time.

4.2.2. Units under rout or demoralization do not follow the orders given the parent unit.

4.2.3. Elements that are under fire while stunned or pinned down do not follow tactical orders given its parent unit.

4.2.4. Vehicles that are damaged or immobilized do not

need follow tactical orders given its parent units.
4.2.5. If a unit suffers a moral failure result as defined by the **Morale Failure Results** table the results supersede any and all orders given to that unit by the player.

4.2.6. Elements blocked from moving by terrain features may halt or detour their movement. Elements encountering enemy units that appear and can be seen within **150 GSU** to the front of the element can immediately halt their movement at that point.
4.3. Advance - The unit as a whole must move toward the enemy. All elements must to move more than a shift move **(25 GSU**) toward the enemy but no more than half of full movement. A terrain objective or march distance from some starting location is usually the goal of an advance. Advance orders stay in effect until the goal is reached or the enemy is encountered. Units may change orders from Advance to any other order the following turn if an objective is reached or the tactical situation changes. Losing movement initiative is not sufficient to change from Advance to another order.

4.4. Rush- Elements move full or bonus movement and no element may move half or less movement.
4.4.1. Rushes should be in the general direction of the enemy, but they do not have to be straight forward. Rushes can be made by tacking up to **45**° toward the objective.
4.4.2. Rush orders may be issued to all doctrine units to get them to move full speed if the elements are not within **500** of known enemy elements. In addition Rush orders may be given to mechanized units using '**AoW**' type doctrine to within 300 of known enemy units or '**AoW**' infantry to within 100 of enemy elements. Contrasting this Rush order may not be given to '**Sow**' mechanized units with elements under 500 of the enemy nor infantry within 300 of enemy elements.
4.4.3. Units may change orders, turn to turn, from Rush to any other order before reaching the objective provided the tactical situation changes.

4.5. Bound - Half of a unit must move at least half maximum movement and up to full while the other half covers from a stationary position. The unit should be divided in two equal sized groups of mobile elements.
4.5.1. The half that moves may move up to 200 or one full movement distance (whichever is greater) away from the stationary part of the unit. Once the unit has separated the next order issued must also be a Bound order that moves the stationary elements back into group with the first elements that moved.
4.5.2. Elements of a unit under bound order should stay in sight of each other if possible.
4.5.3. If while separated (200 or more) the Bounding units encounters enemy elements it may not issue any order other than Cover, Bound or Withdraw.
4.5.4. SoW Doctrine units cannot issue the Bound order.

4.6. Charge - Units must move straight (they can avoid terrain hazards) toward the enemy or military objective. The target (objective) must be within sight and within 800 of the command unit (100 for infantry).
4.6.1. Mechanized units using '**SoW**' type doctrine can be issued Charge orders within sight of the enemy. Infantry of both 'AoW' and 'SoW' doctrine may be issued and may carry out Charge orders within 150 of the enemy.
4.6.2. Once given a charge order no other order may be issued by the commander until these units are within 50 (150 for mechanized) of enemy units or suffer a moral loss.
4.6.3. Once charging mechanized elements are within 150 of enemy units their orders automatically become 'Engage'.

4.6.4. Once mechanized elements that have charged have reached their objective and have suffered no morale loss and no enemy elements are within 150, then the unit must issue a Regroup order and halt to regroup with their elements. Infantry that have charged, have not suffered a moral loss, must regroup for a single turn (not move). After this they may receive orders as normal.
4.6.5. Units under Charge order have a +5% bonus added to the morale failure die roll if the unit has lost 25% or less of its elements.
4.7. Engage - Units act as individuals and not as part of their parent organization. It is here they may sweep around, sneak up, look out for their own survival, pivot or stand still to fight the enemy.
4.7.1. Only when vehicles come with 250 of enemy units or when infantry comes with 100 of any enemy unit may this order be issued.
4.7.2. Engaging enemy will disorder an unit. To recover from engagement disorder a Regroup order may be issued that unit. Once this is done other orders may be given the unit. The only other order that may be given a disordered unit is withdraw.
4.7.3. Unlike most orders elements under Engage orders may move any amount up to full movement.

4.8. Cover - (Overwatch if using the modern rules) - Units of one platoon ('AoW' doctrine) or company ('AoW' and 'SoW' doctrine) or battalion covers another unit, itself or an area. As such cover is both a general order and a tactical order. Cover is the default order. If no order is given to a unit it follows the Cover order guidelines.
4.8.1. Units covering are not required to engage enemy units with fire. Covering/Overwatching forces may hold

fire in order not to reveal their positions to other enemy elements.

4.8.2. Elements of a unit covering may shift or move up to half move to find cover, hull or turret defilade positions or fighting positions. They cannot move more than two turns to find such positions for each Cover order.

4.8.3. A unit cannot be issued another order until all elements in the unit ordered to Cover halt (do not move) for at least ½ a turn. Basically if a unit is ordered to Cover and some of its elements cannot reach defensive positions in a single turn the unit must continue to follow the Cover order movement the following turn. In the second turn of Cover no elements that have halted in the first turn are permitted to move again in the second turn.

4.9. Regroup - Units come together to reform and reorganize their formation or leadership. Units cannot regroup while engaging in or are under direct fire.

4.9.1. Platoons of the same company or companies of the same battalion or battalions of the same regiment that have taken losses or elements that have lost their command element may come together. They then can combine their remaining forces into a single unit. Once combined this new unit will determine any new loss percentage from the number of elements making up the new unit. This is called **regroup resizing**.

When determining the percentage of losses, during morale phase, of a regrouped the size is the number of elements at the time of regrouping.

4.9.2. Units regrouping without any command elements must have a new command element chosen for them. In this case an additional **10%** regrouped unit penalty will be levied on this unit if it has to test for morale later in the game

4.9.3. In order to regroup a unit that is within 600 of the enemy must be within 150 of each other. Units further than 600 from any enemy units must be within 250 of each other to regroup.

4.9.4. It takes 1-3 (D3) turns for mechanized units to regroup if a unit has a command element and has suffered casualties. Infantry with a command unit and within 100 of one another need only one turn to regroup. It takes only one turn to regroup if no casualties have been taken.

4.9.5. If there are no command elements present before regrouping it will take 1-6 (D6) turns for a mechanized unit to regroup and select a new command element. Infantry elements which have to select a new command element must take 1-3 turns to regroup.

4.9.6. Unlike most other orders elements under Regroup may move toward their command element using up to full movement.

4.10. Withdraw- Elements within the organization unit must move away from the enemy. They may make it by charging, rushing or bounding to the rear.

4.10.1. Units must move at least a half movement per turn.

4.10.2. Vehicles may back away but must use their full movement doing so.

4.10.3. Elements may engage in combat as they move away. They may not move toward or closer to the enemy however.

4.11. Initiative - This is the ability for units to make last second responses to enemy moves. This is not an alternative to issuing proper orders. This is just a way to carry out those orders in the most flexible manner. Generally both sides in a battle will move simultaneously within a specific movement segment. This is realistic plus it speeds up play. But, when enemy forces approach within **800** of each other there may be a need to see which side moves first.

Initiative

Nation	Time Period							
	1939	1940	1941	1942	1943	1/44	7/44	1945
Finland	+3	+3	+3	+2	+2	+2	+2	+1
France						+1	+2	+2
Germany	+3	+3	+4	+4	+3	+2	+1	
Italy						+1	+2	+2
Japan	+1	+2	+2	+2	+1	+1	+1	
Poland							+1	+1
Russia	-2	-2	-2	-1				+1
U.K.		+1	+2	+3	+2	+2	+3	+3
U.S.A.					+1	+2	+3	+4
Other Allied	-2	-2	-1	-1	-1			
Other Axis	-1	-1	-1	-1	-1	-1	-2	-2

Add Initiative Bonus to initiative die roll.
Elite troops add an additional +1 to die roll.
A tie results in a straight 'roll off' with the highest die roll winning (no modifiers).

Winner of the initiative moves second in each movement segment. It does not determine who fires first nor does it allow an element moving full move after an element moving half. Regardless of who wins or loses initiative tactical orders must be followed.

4.11.1. Each side rolls a D10 to determine who moves last in each segment for that turn. Note that this is only within a segment. A full moving unit will always move before a half moving unit no matter who wins the initiative.

4.11.2. Only roll once per side if it consists of a single nationality. This is computed for the command element of the highest echelon on the game table. If there are mixed nationalities, each nationality commander will get to make

a roll for their command. Add to this die roll any bonuses of minus penalties that apply (see **Initiative Bonus** table).
4.11.3. The highest total will move last. The lowest first.
4.11.4. If a tie results there is a straight roll off. No bonuses are added.
4.11.5. If the highest echelon command element suffers a moral loss the entire side automatically loses initiative until the unit can regroup.

Example: The highest on board command element for the Germans in a 9/1944 battle is Wehrmacht. But there is a single elite SS company (+2 modifier) in the game. The German side rolls a '5' and the American a '6'. The American would win and go last except for the one company of SS which in this turn would go last. (Their +2 modifier only applies to them.)

Note - Initiative sequencing (**4.11-4.11.6**) is a playability rule and as such there is no reality that is intended to be simulated. Players can decide to modify it to their liking. They could let each player roll a die for their command and go in whatever order that this results in.

4.11.6. If certain lower echelon units have higher (or lower) initiative modifiers then their initiative total will be done separately using the same die roll.

4.12. Orders Chits - Instead of written orders small chits could be used to issue orders. Only four different kinds are really needed. They can be labeled on one side as **Full, Half, Shift, Withdraw**. This basically tells the players how much movement and correspondingly which movement segment the unit will move in. For full, half the movement is always toward the enemy. For withdraw it is always away from the enemy.
4.12.1. During the orders phase the **orders chits** are placed blank side down next to the unit. During movement the orders are turned over as the units are moved. The units have to follow the chit orders. The orders also serve to remind players how much movement the element did during the firing phase.
4.12.2. Orders such as **Charge, Rush and Bound** are all full movement orders. Players can simply announce which of these flavors of **Full** movement is being done.
4.12.3. At the end of the turn pick up the chits and prepare for the next turn.

4.13 Command range. Units on the platoon level, or Company level for SOW armies, will generally stay within 150 GSUs of the command element for infantry and 350 GSUs for mechanized when in sight of the command element. That is so the command element can determine where sub units are and so to judge where the tactical orders will take them. In the game the result of being out of command range will cause a slow down in orders being followed. (In reality it means it is more difficult to formulate a tactical order if the sub-units cannot be co-ordinated.)

4.13.1. When not within sight the command range drops to 75 GSU for infantry and 200 GSU for mechanized units.
4.13.2. Units not within command range have a one half turn delay imposed to perform movement if the TO is different from the previous turns TO.
4.13.2.1 Stationary infantry elements do move in the first infantry movement segment. They follow Cover orders for the fist half turn.
4.13.2.2 For mechanized units with orders of Full movement is cut to half movement. Orders of Half movement or less moving elements do not move at all until the following turn where they move only half movement. Units follow Cover orders the first half turn.

4.13.3 Maximum Command Range for Company level, or Battalion level for SoW armies, via combat radio, is up to 800 GSUs for FM radios or 600 GSUs for AM radios, with range being reduced as per 5.0.5 and 5.0.6. Range is measured between the Command elements of the different levels.

e.g. The Command Elements of German Panther G Platoons A and B, must be within effective combat radio, up to 800 GSUs, of the Command element of their Company.

4.13.4 Command range above Company level, or Battalion for SoW armies, is effectively irrelevant in terms of playable table area, but imply Radio Contact being established through a roll as stated by 5.1 and 5.2.

4.13.4.1 Command range for command elements on the Platoon or Company level that set up in defensive positions and do not move is double that of normal start positions. They are assumed to be tied in with telephones or telegraphs. (Cutting these lines with artillery is possible but beyond the scope of the pace of the game.)

5.0. Communication - In order to execute battle plan changes, co-ordinate attacks between companies or above or organize defense units must be able to communicate with one another. While it is possible for close by units to communicate with semaphore signals, flares, telephone or runners most distant communication is done through the use of radios. Radios are the most used method of communications at the tactical level. The ability to communicate via radio is limited by the range and the amount of information to be transferred.

5.0.1. Most AFVs and some other vehicles have a combat radio. FM radios have a combat range of 800, while AM radios have a range of 600.

5.0.2. Most companies will have a command element with a radio that will have a range of 10-25 kilometers.

5.0.3. Battalion level command or higher, special radio communications vehicles will have radios with ranges of 60 kilometers or more.

5.0.4. Forward observers spotting for artillery may have radios with ranges of **10-25** kilometers.

5.0.5. Terrain effects are a major cause in the reduction of radio range. Low hills can reduce FM radio range by a 25% while reducing AM radio range by one third (33%). Tall hills and mountains reduce FM range by 50% while reducing AM radio range by two-thirds (66%).

5.0.6. Weather conditions or enemy jamming or even friendly noise also has a detrimental effect on radio communication distance.

5.1. In order to send a message through the use of radios between two elements above the tactical level one must make Radio Contact. Roll one D10 using unders and overs to make that contact on the **Radio Contact Table.** A success means the message has been received and understood.

5.1.1. Only one attempt is made per contacting element per turn.

5.1.2. If more than one element is trying to contact the same element note all that will try in a turn. Then roll for each contact. If more than one makes contact then the highest roll receives priority and gets to relay their message or request for artillery support. If both (or all) the highest numbers rolled are the same then the message is garbled and is not clearly received. (Note game masters may have some fun with this and may make up some gargled message to be sent or received to maybe confuse players.

5.2. Operational communication is done during the Communication Phase of a turn. A change of operational orders, or of artillery placement must be communicated during this phase. Write down any change of artillery position at this time.

The artillery Forward Observer or control element must anticipate any movement of target in writing.

RADIO CONTACT TABLE		
Type Contacting Element	New Contact	Maintain Contact
German Infantry Forward Observer	5	0
German Command Element	6	1
US Infantry Forward Observer	4	0
US Command Element	5	0
British Infantry Forward Observer	6	0
British Command Element	6	1
Russian Infantry Forward Observer 39+	9	2
Russian Infantry Forward Observer 43	8	2
Russian Infantry Forward Observer 44+	7	1
Russian Command Element 43	7	1
Other Infantry Forward Observer	8	1
Other Command Element	8	2

New Contact is required each time a new request for fire is called.
Also New Contact is needed for some change of plans from one company command to a higher off board command element.
Command elements requesting fire are usually company or battalion leader elements.
Treat special radio FO vehicles same as Infantry FO with -1 to maintain contact.
Elements only need to maintain contact to change location of artillery fire or stop it sooner than requested allocation.

5.2.1. Requesting and getting artillery fire support is only part of the process. Once artillery arrives it may need to be corrected. In order correct fire the radio contact must be maintained, but contact does not need to be maintained while waiting for artillery to arrive. Roll each time an element wants to contact the artillery battery in order to direct it. If the control element does not wish to maintain or fails to maintain the radio then contact ends. In order to communicate again with the artillery or command element a new contact roll must be made in another turn.
5.2.2. Command elements at company or battalion level do not normally need to be in contact nor maintain contact with their command elements at higher echelon. They do need to make contact when there is a change of plan or for some warning to be sent. Or when morale failure results in forcing them to contact and to re-affirm or change their orders.

5.3. Linking Time - I will take only one turn to link to the command element directly above or below the contacting element.
5.3.1. There is an additional two turns delay in linking to each successive higher or lower echelon command element.
5.3.2. Where there is a single designated FO per dedicated artillery battery the link time is only one turn. Where there is more than one FO per battery or the link to the artillery battery is from a command element the link time is two turns.
5.3.3. Once a link has been made the element making the link can make an artillery support request that turn.
5.3.4. There is an additional one turn delay in a request for artillery as the request must be verified and approved. So the least amount of time from request to artillery arrival is **two** turns for a FO and **three** for a command element.
5.3.5. At least two more turns are need to link to and receive artillery support for batteries not directly in support of the calling element.

6.0 Movement - In order to close with the enemy or escape the enemy, friendly units (models) must be moved on the game table. A defined amount of movement distance is allocated to each movable element each turn. When it comes time to move that element a tape measure (metric) is drawn from the leading edge of the model to a position ahead of that unit to measure the prescribed amount of distance. Then the model is picked up and placed at that point in the same orientation as it was before. Deductions from the prescribed movement allowance are made for various factors such as turns and terrain type. Clear terrain costs movement on a one factor per one GSU traveled basis. Other terrain types cost more than one movement factor to cross. See the **AFV Movement Cost Table** for various factor costs.

There are 6 separate movement segments in each turn. In each movement segment a player may move all, some or none of the units permitted to move. Players may alternate movement within a segment in order regiment play. The side with the lowest initiative score for that turn will go first within each segment. The amount of movement a unit can make is dependent on the speed of the unit and type of terrain it crosses.

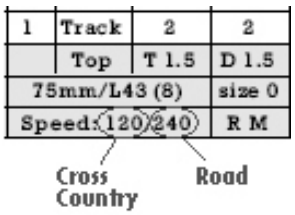
6.1. There are two movement segments dedicated to infantry and aircraft movement. Infantry and aircraft units divide their turn's movement by half and can use half in each segment. In cases where infantry will not come within 250 of any enemy one can save time and use all their movement in a single segment. Ground vehicles must use one of the other three movement segments to do movement.

6.1.1. Infantry movement is defined as **25** per segment or **50** a turn total for good going. Infantry moving through rough terrain or woods may only move **20** per segment or **40** a turn.

6.1.2. Infantry can charge **40** for a single segment but this must be part of its orders and there must be an enemy unit within **80** as their objective. It is allowable for infantry to charge two segments in a row, however they are assumed to be disordered in their second charge move and may be less effective.

6.1.3. Infantry that have their morale broken must rout away from the enemy. Infantry rout by moving **25** in one segment and **50** in the next. Routing infantry are always in disorder.

6.1.4. Infantry in cover must declare if the are hidden at this time. This like buttoning/unbuttoning an AFV can be done once per turn.



6.1.5. Cavalry move in the infantry movement segments. Normal move is **100** per turn. Unlike infantry cavalry may charge at **150** per turn for four consecutive turns. Or, a one turn charge move of **250** per turn. But may not charge again for 4 turns.

6.1.6. Horse or mule drawn wagons and carts move at **40** per turn on roads and good going. May make charge moves of **125** per turn for 4 turns on good going.

Note - for combat cavalry are treated like squads of infantry but horse transport are treated like individual soft vehicles.

6.2. Each motorized ground unit (which from here we will just call a vehicle) is assigned a cross country (**CC**) speed and a road speed. Amphibious vehicles are also assigned a water speed (W). The values of which are found on the vehicle data charts. This amount of movement is said to be their movement allowance.

6.2.1. When a vehicle spends its entire movement for a turn traveling along roads it can use the road speed movement.

6.2.2. When a vehicle moves only on non-road terrain or on a combination of road and non-road terrain it may only use the Cross-country movement for that turn. Also, when crossing rubble, road blocks or wreckage and moving only on the road a vehicle must still use the cross-country speed.

6.2.3. When crossing obstacles or special terrain features there are further deductions in movement applicable. The designer of the terrain situation will be the one that defines special terrain as embankments, walls, steep grades or anything else that would be difficult or expensive for a vehicle to cross.

6.2.4. Vehicles may only move in reverse at ½ full movement if unbuttoned or ¼ full movement speed. No AFV may move greater than **50** in reverse. (Unless it is a reverse-full speed moving (FR) vehicle.)

Moving in reverse is considered a vehicle's full movement even though it can be far less than their normal cross-country or road movement allowance.

6.3. There are three movement segments dedicated for vehicle movement. Segment number 2 is for vehicles that are moving full or at least moving more than ½ their full movement. The next segment is for vehicles moving less than or equal ½ their full movement allowance but move than **25**. The fourth movement segment is for vehicles that are only going to pivot, or shift position slightly.

6.3.1. All vehicles moving full movement or expending more than ½ their movement allowance must move in Movement Segment 2.

6.3.2. All vehicles moving or expending ½ of their movement allowance may only do so in **Movement Segment 3.**

6.3.3. All vehicles simply pivoting or vehicles shift

moving 25 or less , including those changing from hull down to turret down or from turret down to hull down are considered to be doing a ***shift move***. (Also note shifting vehicles are not considered moving targets when it comes to trying to hit them.)

6.3.4. Vehicles are only permitted to move in one of the three Movement Segments. Thus, a vehicle, which has moved in the **Full Movement** segment (2), may not make a shift move in Movement Segment 4. Even though they might then find enemy units to their flanks. So once it moves it may not move further in a turn.

6.3.5. To move a model that will make a turn move the model up to the point of the turn. Determine if there are sufficient movement factors remaining in the move to make the turn. If so then pivot the model at that point and deduct the turn cost from the units remaining movement factors. If there still are movement factors left in that unit's movement move the model straight ahead again.

6.4. Tracked vehicles are difficult to maneuver. They generally travel nearly straight except to make sharp turns. A tracked vehicle must expend 25 of its movement allowance for each turn 22.5˚ or more that it makes. If it makes a turn of 60˚ or more while moving forward or backward it must expend 50 (an additional 25 not an additional 50.) Turns under 22.5˚ are free as long as the path does not deviate by more than 22.5˚.

6.4.1. Stationary tracked vehicles only expend **25** to pivot in place 45˚ or more.

6.4.2. Wheeled vehicles expend 25 if turning 45˚ or more.

6.5. Bonus Movement - An AFV may move an additional 50% of its movement if the following are true:

A. The vehicle moves straight ahead and does not turn.

B. The vehicle moved straight and full speed last turn while in clear open terrain.

C. The vehicle does not fire and has both its driver and commander unbuttoned.

D. The vehicle may only move along roads or across clear open terrain.

6.5.1. A vehicle which moves Bonus movement and which then crosses any linear obstacle or broken terrain can possibly damage its suspension. Roll a D6 per turn for any such vehicle. A '1' means the vehicle has slightly damaged its suspension or tracks. The vehicle must halt at the half way point for 4 turns.

6.5.2. A vehicle moving Bonus movement automatically loses move Initiative for that turn.

6.6. Burst Movement - An AFV may move at 1.75 times normal movement if it elects to Burst Move. It may only Bust move under the following circumstances:

A. The vehicle Bonus moved the previous turn.

B. The vehicle did not Burst move the previous turn i.e. no Burst movement two turns in a row.

C. The vehicle moves straight ahead and does not deviate is path by more than 22.5˚.

D. The vehicle does not fire and has both its driver and commander unbuttoned.

E. The vehicle may only move along roads or across clear open terrain.

Note - Technically Burst movement works out to be the maximum real speed the vehicle is usually associated as being able to attain.

6.6.1. A vehicle moving Burst movement can possibly damage its suspension. Roll a D6 per turn for any such vehicle. A '1' means the vehicle has damaged its suspension (tracks) at the halfway position. Back up this roll with another roll. On a 1-3 (D6) the track/suspension is permanently damaged and the vehicle can no longer move during the course of the game. Other than that the vehicle may not move for 4 turns.

6.6.2. A vehicle moving Burst movement automatically loses move Initiative for that turn.

6.7. Instantaneous Reaction (Auto Sight)- There will be cases where during the movement phase a unit cannot help but sight an enemy unit. If a moving unit could sight the enemy unit from a position during its movement by making the worst possible roll on the Sighting Chart it spots the enemy unit automatically.

6.7.1. Units automatically spotted can be reacted to by maneuver as any unit might do to avoid an enemy.

6.7.2. Units may only react on an individual basis and may not communicate their knowledge during movement to another friendly unit.

6.7.3. Moving units (except those moving Bonus or Burst movement) with enemy within 150 of their front may assume to be given 'Engage' orders and seek cover or attack.

6.7.4. Even vehicles moving Bonus or Burst move may use Instantaneous reaction. In this case the vehicle can only seek to avoid collision with enemy units by halting or making turns. On doing so both Bonus and Burst moving units must make a suspension damage roll as per 6.6.1.

6.8. AFVs may not move over enemy units unless performing an **Overrun** attack.

6.8.1. Tracked vehicles may run over and attempt to 'crush' enemy infantry, artillery or light weapons it encounters.

6.8.2. Tracked vehicles may attempt to 'crush' any enemy unarmored vehicles. It may try to push aside any abandoned armored vehicle. To be able to push aside another AFV the pushing vehicle must weight at least as much as the pushed vehicle. Pushing speed is **15**.

6.9. Vehicles may transport units or items by either

carrying them on top, within or by towing them behind them.

6.9.1. In order to be transported a unit must be loaded onto the transporting vehicle.

6.9.2. A 'loaded' artillery piece will be towed behind a vehicle. In order to be used the artillery piece must be 'unloaded' from the transporting vehicle.

6.9.3. If a vehicle is destroyed while towing an artillery piece the artillery unit is destroyed also.

6.9.4. If a soft skinned vehicle is destroyed any infantry it is transporting are also destroyed too.

6.9.5. If an AFV is transporting infantry either by riding inside the AFV or on top of the AFV there is a chance that they will be destroyed. For vehicles riding on the outside of a vehicle treat hits on the vehicle as also a hit on the infantry per shell killpower. (On the Killpower Adjustment Factors table there is a line adjustment for riding on the outside of an AFV.) For hits on AFVs with infantry passengers there is a roll to knock out internal passengers.

6.10. Night Movement - Vehicles may move at night with or without driving lights. No Bonus or Burst movement is allowed at night.

6.10.1. Infantry movement is reduced to 15 per Movement segment at night. Infantry cannot charge move if there is less than 50% moonlight.

6.10.2. Vehicle movement is reduced to 75% when using driving lights and to 25% when not.

6.11. AFVs may transport units or items by either carrying them as in the case of infantry or towing them as in the case of artillery pieces. In order to be transported a unit must be loaded to the carrying/towing vehicle. In order to be used an artillery piece must be unloaded. When loaded all units are considered to be the same target as the transporting vehicle.

6.11.1. One full turn is required to load or unload artillery pieces for towing.

6.11.2. One full turn is required to load and unload most infantry units. Russian descant infantry riding on AFVs ('tankodesantnik') take only ½ of a turn to load or unload onto the outside of Russian tanks.

6.11.3. Both the transporting unit and the cargo unit must be placed together and not move for the time it takes to load or unload.

6.11.4. Unloading a towed artillery piece does not enable it to be fired. To be able to fire after being unloaded additional time (turns) must be spent stationary preparing the unit to be fired. Should the weapons crew be routed or suppressed the time spent routed/suppressed does not count toward the setup time.

6.11.5. There is also a take down time cost for some artillery pieces. This is the time required to gather various supplies associated to the weapon. If it is an emergency the weapon may be loaded in only 1 turn. Thereafter the weapons setup time is doubled.

6.11.6. Self-propelled artillery does not need additional setup time to fire direct fire. But to fire indirect fire it must take some additional time to setup. This is ½ the setup time of towed weapons of the same caliber.

Set up and Take Down	Required Time	
	Up	Down
Anti-tank gun up to 60mm	1	½
Anti-tank gun 60 - 80mm	2	1
Anti-tank gun 80 - 110mm	3	2
Anti-Aircraft gun up to 60mm	1	½
Anti-Aircraft gun up to 110mm	3	2
Mortars up to 66mm	½	½
MMG, HMG	½	½
Mortars 66 - 88mm	1	1
Mortars 88mm - 130mm	2	1
Self-propelled Artillery up to 95mm	1	1
Artillery up to 95mm	2	2
Artillery 95 - 165mm	3	2
Artillery 165- 210mm	4	3

6.11.7. Setup and Take Down Table lists the various costs associated with deployment of artillery and other weapons.

6.12. Terrain - Players may configure their game play area to represent real locations or may makeup their own arrangement. Generally the area of play will be at least a 4' x 6' area. Anything else might limit mobility of the troops depending on the scenario. Such a small area could still be used for some early war games. The terrain could be sculptured out of sand or from terrain modules. Even just a flat table could be used with felt or carpet covering it. Various standard terrain features are defined as such:

6.13. Hills - Each hill is an irregular shaped feature that rises at least 25 GSU and is at least 200 x 100 on the side. Each hill is to be from 1 to 6 contour levels in height. One contour level is high enough to block sight through it between units on lower contours. Since play is meant to be on a three dimensional surface a straight edge, string, mirror or laser pointer can be used to determine if the hill blocks line-of-sight.

6.13.1. Movement up or down normal hills is done at half speed.

6.13.2. Movement up steep hills is done at a maximum 75 per turn for tracked vehicles. Wheeled vehicle with

Vehicle Movement Costs Table			
Movement Situation	Speed	Max. Move	
		CC	Road
Moving in clear terrain.	Full	Full	-
Moving along roads	Full	-	Full
Climbing hills	½	½	
Through light woods.	½	100	-
Through heavy woods.	¼	50	-
Through soft sand.	½	100	
Through rocky ground	½	100	
Through high vegetation	¾	150	
Through bog or marsh	¼	50	
Through deep snow	½	100	200
In reverse (un-buttoned)	½	50	50
In reverse (buttoned)	¼	30	
Crossing linear obstacle	-50		
Turning over 22½˚ to 60˚	-25		
Turning over 60˚	-50		

less than three axles cannot climb steep hills. Wheeled vehicles with three or more axles can climb steep hills at **50** a turn. Note - no vehicle may climb at more than ½ maximum speed, so if 75 is more than ½ maximum then the lower number must be used.

6.14. Woods - and forests of sufficient dept will block sight and hinder movement. Woods are defined by being at least 25 x 25 of wooded area. Anything less is considered to be small clumps of trees and do not hinder sighting or firing are considered linear obstacles for movement purposes. Woods are from one to two contours high. Use green felt to better define the outline of the wood area. Since the outline is all that is needed the felt can just be a ring and can be hollow inside. Place model trees or model RR lichen on the felt to give it that forest look.

6.14.1. Light woods - are the most common form of woods in Western Europe where the underbrush is usually cleared. The maximum speed in these woods is **100 GSU.** There may be a chance of the vehicle stalling when moves through these type of woods.

6.14.2. Thick woods - may be found in deeper forests far from towns. Movement through these woods must be limited to **50** GSU a turn. There is a greater chance of stalling for vehicles moving through these woods.

6.14.3. To test for stalling. Roll one D6 for the first time a vehicle enters a wooded area. Once in the woods make an additional roll for each turn a vehicle moves through any woods. On a '1' the vehicle stalls.

6.14.4. Vehicles moving along roads through woods use the road movement rate and do not roll for stalling.

6.14.5. Stalling only means the vehicle does not move any further in the turn. It simply stops and ends its movement for the turn. It happens at the first GSU of the vehicles movement in the described terrain. The next turn the vehicle recovers and may attempt to move again.

6.14.6. Mud/bog: Mud/bog is very soft ground that vehicles and troops have difficulty traversing. It can be represented by dark brown felt or by dark brown areas on terrain boards. Movement: Infantry: ¾ speed. Full tacked vehicles: ½ speed. Roll to stall. Half-tracked or Wheeled (4-wheel drive) vehicles: ¼ speed. Trucks: ¼ speed. Will stall on a '1' or '2'.

6.14.7. Houses and Buildings. These block lines of sight and provide cover. At the ground scale of the game individual houses and building can't be shown. Blocks of houses or buildings can be represented by felt squares. But to make this more visually pleasing place model houses on top of this. A special Terrain Section at the end of these rules will explain the attributes of most terrain features.

6.15. Double Length Turns

While moving in the initial stages of a scenario, or moving while retiring from battle during the conclusion of a scenario it may be advisable to double the time of a turn. All movement distances are doubled. Orders are only issued once per double turn. Sighting is done only once but has a +2 adjustment for all group sighting.

6.15.1. When moving into contact and enemy units are sighted and are within combat range, turns return to their one for one rate.

6.15.2. All units must either use the double length turns. If one uses normal length turns all must do so.

6.16. Turret Rotation (Advanced Rule) - Turret rotating is done anytime during movement, but does not cost vehicle movement to do so. It is most often can be done at the end of movement. Turret turning is not considered movement so players can position the turret in the last movement segment if they wish.

6.16.1. Tanks and other turreted AFV differ in the speed in which they can turn their turrets. Thus each tank is rated as to their turret rotation(turning) speed.

6.16.1.1. Fast turning turrets are rated as (**F**).

6.16.1.2. Medium speed turning turrets are rated as (**M**).

6.16.1.3. Slow turning turrets are rated as (**S**).

6.16.1.4. Very slow turning turrets are rated as (**V**).

6.16.2. While there is no movement penalty for turning turrets there is a firing to-hit penalty and a phase delay for turning more than a basic number of degrees given by the turret turn class.

Penalty	Fast	Medium	Slow	Very Slow
+1	135˚	90˚	45˚	30˚
+2			120˚	60˚
+3				135˚
The penalty is an addition to the to-hit number as well as the delay in firing. Each penalty factor is a delay of one fire segment in firing.				

6.16.3. Example: If there is one phase of delay then the unit is going to fire in stationary fire phase it must delay to the shift fire phase.

Example: If a shift firing unit which must have a two phase delay it may only fire in the full moving phase.

6.16.3.5. German medium and heavy tanks needed to power their turning mechanism from the engine. If that is turned off or knocked out the turn rate goes to slow (S).

6.16.4. Two positions at once. The question was asked: "Where is the turret's gun pointed at any time during a turn?"

The answer is – the gun faces the target it last fired at until its turn segment to fire takes place. Then it assumes the new orientation.

Example: If a stationary tank with fast turn was firing north the last time it fired in the previous turn turned it turret west (90˚) it is permitted to fire in segment 1. Any tank firing in segment 1 from the west toward the fast turn turret tank can hit it only on the front turret.

Example: If a stationary tank with (M) turn was firing north the previous turn and now has turned it turret to fire south west (135˚) the turret is considered to be turned north until fire segment 2. There is no pro-rated turn angle, thus a turret hit coming from the west in segment 1 would be on the side turret not the front.

6.16.5. Because a turret can only be pointed in one direction in a turn tanks cannot fire in one direction then turn the turret and fire in another direction outside their firing arc. While this is not permitted, what is permitted is position the turret such that both targets are within the gun arc. This may be pointing the gun at a position half way between potential targets.

Example: Two Russian T-34/76s have appeared the previous turn **150** away from a German Panther tank. The Panther had fired the previous turn but managed only a bounce off the turret of one of them. This turn during movement both T-34s rush forward (Engage Orders) one on each side of the Panther to get to within point blank range. This is a very difficult problem for the German. The Panther must try to hit and destroy one T34 in the first fire segment and the other in the final fire segment. Luckily the T-34s will move full and only be allowed one shot each in the 4th fire segment. To get both targets the Panther cannot keep the gun pointed exactly on to the T-34s last position and it can't turn it turret to point directly at one or the other moving vehicles final position. The Panther (M rated turret turn) must turn his turret around 45˚ from the beginning position of T-34s and hope the final position is also within his covered arc.

First segment fire. The Panther fires at the T-34 no longer in its covered arc. This is a disappearing target. This T-34 does get to move 1/8 movement before it is a target. Check to make sure the Panther did not turn its turret too far and let this tank slip away. If it still is in the current firing arc it can be attacked. If the vehicle is destroyed or immobilized it remains at its 1/8 movement point. In the third segment the Panther again gets to fire. If the other T-34 is also in its firing arc this can be selected as a target. If it is destroyed then the Panther has saved itself. If in any case one of the T-34s gets to the side of the Panther it can have a stationary side shot.

6.17. Ground Slope Effects (Advanced Rule) - Vehicles are affected quite drastically by the angle of the ground. In climbing hills and aiming while on side slopes, tanks are adversely affected. The following rules are to try to take this into account.

When climbing hills, measure the slope ALONG the axis of the vehicle. If the angle is 10˚ or higher, consult the below table to find the cost in moving up the hill:

Angle	Movement cost
10-19˚	1 GSU per 3 GSU's moved
20-29˚	1 GSU per GSU moved
30-44˚	2 GSU's per GSU moved
45-60˚	3 GSU's per GSU moved

over 60˚ not possible

7.0. Sighting Other than by radio (and maybe by radar) information the only way to determine and respond to enemy activity is to spot (sight) them. A successful sighting check must be made on an enemy unit before any direct weapons may be directed at that element. In order to sight a unit three things are necessary.

7.0.1. The element to be sighted must be within the covered arc of the sighting unit.

7.0.2. A direct line of sight must exist between the two. This can be affirmed with the use of string or with an optical check.

7.0.3. The element to be sighted must be within proper sighting distance of the sighting unit. Sighting distance is a variable factor and can be found by employing the Sighting Calculator.

7.1. Button Up - Most AFVs have the ability to close hatches and fight from the full protection of their vehicle (button-up or close-up.) But, this has a cost. It is not easy to see from within a closed-up AFV. Thus there is a reduction in the sighting ability of a buttoned vehicle. Some vehicles have cupolas. These help sighting slightly when a vehicle is buttoned up.

7.1.1. Players must declare which vehicles are unbuttoning in the second Movement Segment (Close-up / Unbuttoning). Once buttoned in this segment the vehicle must remain buttoned the full turn. A vehicle may button-up later in the turn if it comes under attack. This does cost that vehicle somewhat in its ability to engage targets.

7.1.2. Only vehicles with hatches and armored roofs may button-up. Open topped or unarmored vehicles are always considered to be unbuttoned.

7.1.3. When AFVs are moving at Bonus and Burst movement speeds the driver must be unbuttoned. Some open topped vehicles have an armored roof (with hatches) over their drivers. In that case the driver would have to be declared to be 'unbuttoned' even for open topped vehicles.

7.1.4. Auto-buttoning - When unbuttoned AFV that receives a hit from fire in a segment it may button-up at the end of that segment. The AFV must, of course, have the ability to button up. The vehicle cannot fire in the fire segments after it ***auto-buttons***.

7.2. The Covered Arc is an area in which the sighting element can attempt to sight or can make an automatic sighting of all (friendly and enemy) units. The arc theoretically extends to infinity, but practical sighting within the arc is limited by terrain or the disposition and condition of the viewer and the target.

7.2.1. The Covered Arc of a buttoned up AFV is an area within **45**˚ of a line straight forward of the front turret of a vehicle. This will usually coincide with an area 45˚ either side of the vehicles main gun. The driver and hull gunner also have a covered arc but it is only an area **22.5**˚ either side of the front of the vehicle. (This may be important when the vehicle's turret is facing a different direction than the front hull.)

7.2.2. The **Covered Arc** of an open topped, unbuttoned AFV, or any infantry heavy weapons or gun crew is **90**˚ either side the main gun or front of the infantry unit.

7.2.3. Moving infantry will have a covered arc of 90˚ either side of the direction of march. Stationary infantry will have a compete 360˚ covered arc.

7.2.4. Set-up and stationary anti-aircraft weapons have a **90**˚ covered arc of either side their main gun(s).

7.3. Units have one chance to sight in each Sighting Phase. Units may attempt to sight all elements that are both within sighting range and within the covered arc as long as they are not obstructed.

7.3.1. During the Sighting of Movement Phase units may only attempt to sight other units that have just come into the covered arc the previous Movement Phase or are currently in the covered arc but have not been sighted. Do not use the fact the unit has fired in the past as part of any sighting roll at this time.

7.3.2. During the Sighting of Firing Phase units may only attempt to sight other units that have fired in the previous Combat Phase. Do not use any factors that take into account whether or not the vehicle has moved as part of any sighting roll at this time.

7.3.3. A successful sighting will be of ALL units of a certain disposition (in the open, hull down, in woods, etc.) by the sighting unit(s) up to a specific range and within the covered arc unless the line-of-sight is blocked by a physical object (hill, building, forest).

7.4. Elements may attempt to sight as individuals or as part of a group, but not as both. Units with radio contact with other units of their platoon within **100** of each other may be part of a group sight. Units without radio contact within **25** of another unit may also sight as a group. Additionally only units that are in the same sighting class may combine their sighting into a group. Only one roll on the **Sight Table** may be made per turn by any element or group. The reason that a group would be used is because each member of a group increases the sighting variable die roll by two factors. A sighting class is defined as units with in close proximity and all disposed (moving, firing, facing the same) the same way.

7.4.1. To spot as part of a group all the elements must be within communication range and have overlapping covered arcs.

7.4.2. Units wishing to sight as a group must be of the same sighting class. A class may not contain elements that

are both over and under the maximum (100%) sighting distance any target.
The rank of sighting from the best at letter 'A' to the worse for letter 'D'.
The classes are:

A. Open (un-buttoned) and stationary or any infantry squads.

B. Open and moving

C. Closed (buttoned up) and stationary

D. Closed and moving.

Example: Three tanks of a platoon are unbuttoned and overwatching as four tanks of another platoon of the same company, make an advance toward some woods. In the same turn enemy tanks move hull down along a distant hill crest. The three stationary tanks may make a group sighting attempt since they constitute members of the 'A' class. The four moving tanks may also make their own group sighting attempt as they are a 'B' group.

7.4.3. If vehicles cannot sight as a group in a turn they must sight as individual elements. Groups do not stay grouped the entire game. They may be re-constituted each sighting phase depending on circumstances of placement. Players may voluntarily reduce the class of units so to combine them with lower class units in order to create a larger group. This is more or less playing with the rules and probability but is permissible.
7.4.4. If the group can sight units out to a distance all units within the group can sight to that range. Provided that the line-of-sight to a particular unit is not physically blocked.
7.4.5. Vehicle units sighting as a group can add +1 for each additional unit within that group. Infantry squads also add +1 per additional squad within the group. Infantry teams and vehicles without Tank Commanders or radios only add an additional +½ (rounded down). The maximum additional factor sum that can be added to any single group sighting is +4.

7.5. Auto Sighting - There is an auto-sighting ability. This can take place any time during movement segment or during the **2a. Combat Sighting Segment**. Taking into account all of the **Variable Sighting Table Adjustments**, except grouping of elements, the distance is the same as when a '1' rolled on the Variable Sighting Table. To use auto-sight an enemy or unknown element appears/fires in the covered arc of that unit. Auto-sighting can only be done on an individual element basis not as a group.
Auto-sighting would take place when rounding a curve on a road and an enemy vehicle or troops are first seen and about to be run into or over. You would not have to move your vehicle any further than to where NOT sighting of these elements is impossible. And at the point of auto-sighting an enemy as very close range an order to advance, rush, bound or charge can be altered to become an 'Engage' order.
7.6. To find if potential targets can be sighted by either individual element or a group determine the observing class of the unit. Roll one D10 per individual or group sighting, Use the **Sighting Calculator** to cross-reference the target-type with the observing class . If the distance, adjusted by the die roll modifier, is equal to or less than the listed distance then the target(s) are sighted unless:
7.6.1. If there is not a clear line-of-sight from the observer to the target , or
7.6.2. If there is some sort of weather or lighting condition that limits the maximum sighting distance to less than this distance.
7.6.3. Distance to sighting units.
Using **The Sighting Distance Calculator:**
1) Start by finding the sighting elements' status (open-moving or buttoned-stationary, for example) and note the "Sighting Factor". The starting sighting factor of all four statuses is clearly listed on the Sighting Calculator.
2) Then apply all modifiers that apply, listed to the right of the sighting calculator.
3) Calculate the resulting range for the resulting "Sighting Factor".
4) Modify the resulting range with the die roll made at the beginning of the sighting phase, modifying the die roll by the number of sighting vehicles.
5) The resulting modified range is the range at which the target can be sighted by elements of the sighting unit. The elements that can sight at this range must meet the minimum requirements used as status and modifiers.
That is, a sighting element in a condition that is worse than the one used in calculating the sighting factor cannot sight the target element.

Any element of the unit that has a clear line-of-sight to the "target" element may be included in the sighting attempt. However, the modifiers applied to the group sighting are from the worst of the group. Example:
Three Panthers have a clear line of sight to US infantry during the firing sighting phase. One of the Panthers fired, the two others didn't. If the commander of the Panthers wants to include the Panther that fired in the sighting group (so that the firing Panther will see the US infantry AND add +2 to the die roll) the -5 modifier for "sighting element fired" must be applied on the sighting calculator. The Panther commander may check both ways to try to sight and may select either after the calculations are done.
There is no limit to the number of elements that a unit may include in its sighting arc and thus count as 'sighted'.

Example: A platoon of four Panthers (unbuttoned, moving) during the sighting movement phase attempts to

sight a stationary US Sherman tank is in some light woods 300 away. The base number for moving unbuttoned is '35'. Target tank stationary in woods is -5 for being in foliage of any kind. An addition -10 for being within 1-25 of the edge of the woods brings it down to 20. The Sherman is a size 1 vehicle which now brings the total to 21 or a sighting range of 150. This is out of sighting range for a single observer, but the Panther can count on three other tanks to help in the sighting. These will add +3 to the random roll for the sighting adjustment table for a group sight. The roll is '7'. While this brings to total to '10' it is only 150% of 150GSU or 225GSU.
That Sherman and all other unseen Shermans in the woods 226 or more away are not sighted this segment. The die roll would have to have been a '9' or better to get the 200% adjustment to have sighted the Sherman.

Example: A company of Russian T-34's Model 1942's (moved, buttoned) without radios is attempting to sight a stationary, hull down firing Pzkw IVH some 600 in distance during the moving-sighting phase.
1) Since the T-34s are moving-buttoned the base sighting factor is 26. The model 1942 has no cupola.
2) Apply all modifiers: Target hull down: -8. Firing: +15 gives a total of 33 for a distance of 500.
3) But the T-34 is part of a 10 tank company thus it has 9 friends. But these 9 friends have no radios so they contribute only ½ point each to a group sight. Even so '+4' is the maximum help that can be given to any group.
4) For the random variable sight roll a '7' was rolled. This plus 4 yields an '11' factor. Which is 150% distance. The resulting sighting distance for hull down Mark IV or any other size 0 AFV is 750 GSU. The German tanks has been sighted.

7.7. First Sight (Also see **8.8** for the effect on Combat)
Note - This is a very important rule and is unique to Panzer War.
Units are not automatically allowed to react to and/or fire at units sighted for the first time in the same turn. Usually something must wait until the following turn before firing cannons at a new target. This situation is called '***first sight***'.
7.7.1. The ability to react to a threat is dependent upon the target distance and type of weapon used.
7.7.2. Auto-cannons and machineguns can always fire first sight at a new target.
7.7.3. The fire segment that this 'first sight' will depend on the amount of movement the firer and/or the target performs during the turn. This will either be in Combat Fire segment 3 or 4. This is because units would normally have to move into sight from an out-of-sight location. In doing so they spend time out of view.
It is theoretically possible for two elements to begin the turn stationary but unsighted and unknown each other. They could each roll to sight in the first sighting segment and succeed. They would be permitted to fire in segments 1 (or 2) and 3 (or 4). They do not move form out of sight to in sight. They are totally in sight of each other the entire turn.

7.7.4. It is also possible to claim to fire first sight from seeing an enemy element fire is Combat Segments 1 or 2. In this case the first possible return fire would be in Fire Segment 3. Such a situation will arise when a concealed element fires in Combat Segment 1 or 2 but is within first sight range (or sighting element has auto-cannons).

7.8. Night Sighting - There are two types of night sighting. The first is absolute sighting. In this the outline of the target can be determined. Like day sighting, absolute sighting has a maximum range. Units within this range can be sighted at one half the daylight range. Beyond this range nothing can be sighted unless there are special circumstances.
The second type sighting is flash sighting. In this the target can be located because its gun flashed or it is emitting some sort of light. The exact outline and range cannot be determined.
7.8.1. Without any sight aiding system the maximum sighting range in moonlight is 250. Without moonlight the maximum range is 50. For partial moonlight determine the percentage of full moonlight that is present and multiply by 2. Add 50 to that to get the maximum range.

7. 8.2. White light search lights illuminate objects within a 45˚ arc as if daylight up to 600.
7.8.3. Flares and star shells illuminate an area as if the area were daylight for two complete turns. The area illuminated is a circle listed 100 in diameter. Usually only one or two elements of a battery will be used to fire a star shell.

7.9. OVERWATCH - (optional rule) Stationary and shift moving vehicles and guns may declare that they are overwatching an area. A marker of some kind is placed at the position if no clear reference point is indicated. (Otherwise a bridge, cross-roads or road bend could be declared.) This is done during the Communication Phase. The point must be within sight and within **800** of the overwatching unit.
7.9.1. Only units under Cover orders may perform overwatch.
7.9.2. If during the movement phase a hostile unit within 75 of this mark the overwatching unit does not have to wait one turn to fire 'first sight' if this is a new target.
7.9.3. If during a firing phase a hostile unit fires within 50

of this mark the overwatching unit may return fire but must delay for at least two fire segments. Thus if the hostile unit fires in fire segment 2 the overwatching unit must wait until fire segment 4 to return fire.

7.10. Disappearing - Once sighted an element remains sighted until:

7.10.1. The target element moves behind blocking cover, the sighting element moves behind blocking cover or some blocking obstruction comes between the two.

7.10.2. Or, the element moves out of the covered arc of the sighting element.

7.10.3. Or, the element moves to a location such that it is over 200% (2 times) or more the normal sighting distance per the Sighting Calculator. That is it becomes impossible to sight the target no matter what is rolled on the variable sighting table.

7.11. Blocking Terrain.

7.11.2. Hills or ridges or other ground contours that block line-of-sight are blocking cover.

7.11.3. Over 100 of light woods or over 25 of heavy woods block line of sight. Under 100 of woods do not always block line-of-sight.

7.11.4. Over 25 of buildings block line of sight.

7.11.5. Over 100 of sketchy smoke blocks line of sight.

7.11.6. Over 25 of thick smoke blocks line of sight.

7.12. Free sighting distance - Elements parked at the edge of woods or buildings can often find positions to look through them to greater distances than they can be sighted at. *There is nothing physical that is being represented here. Since we are playing with certain sized models we have to make allowances for their physical size. That is why this free zone is so large. At a different scale it would shrink considerably.*

7.12.1. Elements parked within 25 GSU of the edge of woods or buildings do not pay for the first 25 GSU of their covered arc. This is the free sighting zone.

7.12.2. Elements stationary have a free sighting zone from their centers up to 25 GSUs in their covered arc.

7.12.3. This free zone only negates the sighting costs up to 25 GSUs in distance. Beyond that distance all sighting calculations are computed as starting from the center of the sighting element not the edge of free sighting zone.

Example: A Pak 40 AT gun is positioned in some light woods. A Sherman tank moves up to a position 75 GSU away but there is 50 of woods between the two. The Pak 40 does get to sight for free through up to 25 GSU of woods. But once beyond that distance it must pay the full -10 sighting factors for sighting through 25-50 of woods.

Had the Sherman crawled up in another direction so that only 15 of woods were between it and the Pak 40 the AT gun would not have to pay any penalty to sight through woods.

7.15 **WEATHER**

7.15.1. The weather reduces the maximum sighting distance.

A. Fog – The maximum sighting distance is 50.

B. Haze – The maximum sighting distance is the sum of 3 six sided dice times 100.

C. Rain - The maximum sighting distance is 100 times a single D6. 1-3 is heavy rain; 4-6 is light rain.

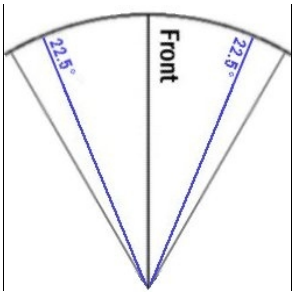
D. Snow – same as rain. 1-3 is heavy snow; 4-6 is light snow.

7.15.2 The weather reduces the to-hit chances.

A. Heavy rain or snow is +2 to-hit adjustment.

B. Light rain or snow is +1 to-hit adjustment.

8.0 Combat - All attacks take place during the **Combat Phase** of a turn. The following rules cover direct aimed fire. Direct aimed fire is an attack of one element directed at an enemy element such that the attacker (which we will call the firing unit) can sight the target unit. The attacking unit is said to fire its cannon or other weapon at the target unit along a line-of-sight. Direct aimed fire is the common method of selective attack on an enemy unit. This can be with cannon fire, machinegun fire, rocket propelled bomb or in the case of infantry small arms fire. There are two general types of direct aimed fire attacks.



Front 22.5˚ fire zone

8.0.1. The first type is an attack on an armored vehicle. In this case the attacker will fire a weapon to hit it and penetrate the armor of the vehicle. If the armor is penetrated the vehicle can be damaged or destroyed and eliminated from play. This process involves a roll to hit, a roll on what part of the target was hit, a roll to determine if the armor is penetrated. If penetrated one or more rolls on issuing damage to the target. This type of attack also covers attacks on other vehicles and anti-tank guns.

8.0.2. The other type is an attack on an infantry or soft target. Here a killpower factor of the attacking weapon is compared to the defense of the infantry or soft target. Sometimes the target must first be hit as if it were an AFV other times the hit number will be included in the kill factor.

8.0.3. To find the gun that a particular AFV uses look on the **Vehicle Data Charts.** Sometimes a vehicle will have more than one cannon. Also found on this chart is the weapons rate of fire **ROF**. ROF is vehicle dependent so two vehicles using the exact same weapon may have different ROF numbers.

To find the characteristics of the Weapon look on the **Weapon Data Chart**. Weapons can often fire a variety of different shells depending on the purpose.

8.0.4. Generally speaking most stationary vehicles and guns will be able to fire twice in a turn. The first segment of fire will be in Fire Segment 1. They may then be able to fire again in Fire Segment 3. Most shifting vehicles would be able to fire in Fire Segment 2 and 4.

8.0.5. Moving elements will usually have their fire curtailed. Half moving elements would fire in Segment 3 and full moving elements in Fire Segment 4. These rules are dependent on the weapon having a ROF rating of 4 or more. So moving delays the order of firing. Remember this when moving your elements.

See Fire Segment Allocation Table.

8.1. Zones - Cover - The Covered zone is the area that a vehicle can spot and see targets or to react to enemy units. The Fire Zone is that part of the Covered Zone that the unit's weapon can be brought to bear without changing its position. The fire zone will be a smaller part of the covered zone.

8.1.2. The fire zone for a fixed gun on a turret or a hull mounted gun is 22.5˚ each side the gun line.

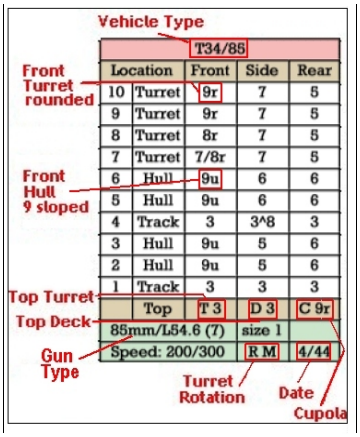
8.1.3. The fire zone of an artillery piece or anti-tank gun is 22.5˚ either side the gun line.

8.1.4. The fire zone of an anti-aircraft gun stationary and ready is a full 360˚ around the models center when firing at aircraft. When firing at ground targets it is 45˚ either side the gun line.

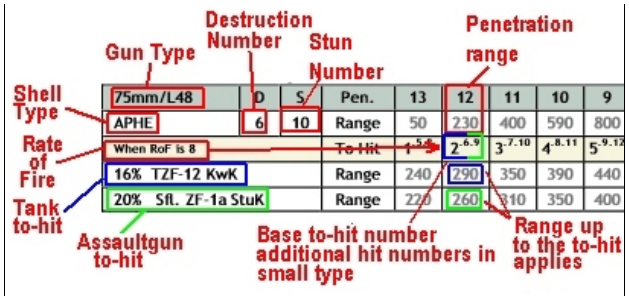
8.1.5. The fire zone for infantry small arms is 360˚ for stationary and 45˚ either side their path of movement when moving. Infantry carried machineguns are 45˚ directly forward of the units base.

8.1.6. In no case may a model be moved or turret turned during the firing phase in order to get a shot at another unit.

8.2. The Vehicle Data Chart lists the vehicle's armor basis of the various facings and locations of the vehicle. There are 10 standard location defined on a vehicle no matter what the size. The numbers usually correspond to locations from the lower on up for the AFV. Location 1 is almost always tracks and location 10 is always the upper turret or super structure. Vehicle compartments are broken down into either 'H' for hull or 'T' for turret. A turret-less vehicle will have a Superstructure compartment which has the same function as a turret but cannot turn. Vehicle armor basis to the nearest centimeter for each location is listed. This is armor protection adjusted for slope of armor and armor quality.



8.3. The **Weapons Data Chart** lists a weapon type and is composed of rows of data on common types of rounds the weapon can fire. Each type will have a To-Hit listing and a Penetration list. The To-Hit section lists numbers from 1 to 10 along the top. These are the basic D10 numbers



that must be rolled (or higher) to succeed in hitting a vehicle sized target. Beneath are the ranges that this will be a success for. The Penetration section indicates what the maximum armor penetration will be out to specified ranges.

8.4. TO-HIT When an attack on an enemy piece consists of firing a weapon at that element a to-hit situation arises. In this case a certain score must be obtained or exceeded by rolling a D10 die. The score that must be obtained is a result of finding a basic to-hit number and adding a series of adjustments to that basic number. Rolling this number or higher on a D10 results in a 'hit'.

8.4.1. The basic to-hit number is listed on the Weapons Data Chart. Directly underneath this number is another number. This is the maximum range that this number succeeds for. If the range (measured from the center of the attacking piece to the edge of the defending pieces' turret/superstructure) is equal or less than the listed range a hit is scored on the target unit. Almost all the to-hit adjustments are shown on the **Direct Fire To-Hit Modifiers Table.**

Example: A German Panther tank with a 75/L70 gun has seen a Russian T34/76 enter its covered zone last turn. It is at a range of 440. Since it was over its auto-sighting range it could not fire at it in that turn. This turn both are stationary. In fires segment 1 the Panther wishes to fire APHE at the T-34. The basic to-hit number is 2 for a range up to 450. This is the Panthers first shot at this target over 300 so there is a +1 adjustment added. No other adjustments apply at this time so the Panther needs just a 3 or better to score at least one hit.

8.4.2. Each time a weapon 'fires' it must roll a separate D10 to attempt score a hit. It is possible for many stationary vehicles and guns to 'fire' up to two times in a single turn. Only one 'fire' (to-hit) attempt is permitted per gun per Fire Segment. (Later we will see that a single firing may result in more than one hit.) All eligible elements are permitted to fire in a turn. All firing in a segment is considered simultaneous.

8.4.3. Acquired Target. A firing element that has hit its target (with direct fire) the previous time it fired and neither the target nor the firer moved more than a shift move can claim to have '**acquired**' the target. This means it is -1 to hit the target.

8.5. Units generally fire while stationary. While it was possible to hit something at close range when moving the game assumes what the vehicle actually is doing when it moves and fires in the same turn is move and then make a short halt to fire. Also, one may notice vehicles moving Bonus and Burst movement are not permitted to fire as they are not assumed to be making a short halt at the end of their turn. (Modern vehicles with good stabilization can fire on the move and there are supplemental rules for this.)

8.5.1. Towed artillery and rocket launchers may not both move and fire in the same turn.

8.5.2. AFVs and self propelled artillery may both move and fire in the same turn. When firing an moving the chance to hit is reduced (the to-hit number is increased) depending on the amount of movement done.

8.5.3. Some vehicles have a gun stabilizer. This slightly helps the vehicle move and fire in the same turn. (Note- in modern times this greatly aides to-hit while moving. See **Airland War** modern supplement.)

8.5.4. Machineguns and auto-cannons with infantry killing capabilities mounted on vehicles do not have to roll for hitting. Their effective killpower is reduced by 1 factor while firing on the move.

8.5.5. Infantry units in the form of squads or teams may move and fire their small arm weapons. There is no To-hit roll when firing infantry weapons. The infantry kill factor is reduced by one factor when moving and firing.

8.5.6. Infantry heavy weapons behave differently depending on their targets. If firing at infantry or soft unarmored targets the killpower factor of the weapon is reduced by 2 when moving. When firing on hard targets or AFVs a to-hit D10 must be rolled to hit the target. In this case the machinegun behaves as if it were a moving vehicle and a to-hit adjustment is added to the To-Hit number. The vehicle in this circumstance would be the weapons team or squad.

8.6. A Target is described as a single unit or a group of similar units all disposed the same and within 75 of each of one another. Disposed means they are all moving together or stationary together usually in line or pattern.

8.6.1. When firing at a group target one of the group must be chosen as the primary target. This unit is the one hit first if multiple hits are scored.

8.7. Disappearing Target - To be fired on a target must be visible at the time of firing. Since firing theoretically can take place anytime during the turn a stationary unit may fire at targets that have moved out of sight in a turn.

This is called firing at disappearing targets..

8.7.1. An element firing at a target along its path may not fire at it during the first ¼ of its movement if the target element has not been fired on by the firing element.

8.7.2. An element firing at a target along its path may not fire at it during the first $^{1}/_{8}$ of its movement path at any time. If the target was able to get completely out of sight under that brief period then it cannot be fired on.

8.7.3. Targets that were sighted in a previous turn but move out of sight during the movement phase can only be fired on with cannons in Fire Segment 1 or 2. As it is only stationary attackers for the most part that can fire in these segments it is therefore only stationary elements that can fire at disappearing targets.

8.7.4. A shift moving element attacking with an auto-cannon or machinegun may fire from its starting position at a disappearing target in Fire Segment 2.

8.7.5. A shifting element with a cannon that is stabilized may fire from its starting position at a disappearing target in Fire Segment 2.

8.7.6. If a moving target which has moved out of sight, is immobilized by an attacker firing while it was 'disappearing' the target vehicle is moved back from its end position to a point within sight of the attacker. It has thus failed to move out of sight. In subsequent fire segments for that turn the attacker or any other attacker. If the target was only stopped (immobilized) it may fire from this spot. It must fire as if it had moved its full intended distance even if it moved far less than that when it was immobilized. Vehicles immobilized or which lose tracks during movement are not allowed to pivot or turn their turrets in that turn.

8.7.7. Elements remain spotted and thus are not new 'first sight' targets until they remain out of sight for one complete turn. Elements that merely move behind cover and then reappear again the same turn or in the next turn can be fired on by sighting elements.

8.7.8. The Fire Segment Allocation Table shows which Fire Segments moving and non-moving units are permitted to fire.

8.8. Firing at First Sight - Elements that fire their weapons at targets in the same turn the target was first sighted are said to be 'firing at first sight'. To fire at any element it must be both within the covered zone and the firing arc. If either the following circumstances are true a element can fire first sight. Otherwise they may only fire the turn following the first sight. In all cases it must be possible to sight the target and to establish a line-of-sight to the firing point:

8.8.1. The firing element is using an auto-cannon, machinegun or small arms. The only range limit for this is the maximum range of the weapon and the target is can be seen.

8.8.2. The firing element is a buttoned up stationary vehicle and the target is **300** or less away.

8.8.3. The firing element is unbuttoned or open-topped stationary vehicle or artillery/anti-tank gun and the target is **450** or less away.

8.8.4. The firing element is unbuttoned and has moved in the turn and the target is **225** away or less.

8.8.5. The firing element is buttoned up and has moved in the turn and the target is **150** or less away.

8**.8.6**. The target has moved to within **50** (75 for auto-cannons or fast turret traverse) of a point bore-sighted, over-watched or a previously acquired target. The range limit to this type of first sight fire is 800 (see 7.9 Overwatch).

8.8.7. When using 'at first sight' firing can not take place in Fire Segment one or two. Even if the firer is stationary. This is because the target is considered to come into view at or after the mid-point in the turn.

8.8.8. Stationary vehicles or guns are allowed to make their 'first sight' firing in Fire Segment 3. All other moving (including shifting) elements perform their 'first sight' firing in fire segment 4.

8.9. Projectile type. The type of round most often used against armored targets is the armored piercing round (**AP**). This comes in many forms AP, APC, APCBC, APBC, APHE. All are meant to defeat and penetrate the armor of a tank or other armored vehicle and destroy the tank from within. The APHE is very much like the other AP shells but it contains a small explosive filler that may cause more damage than the solid shot AP round when it penetrates. The price it pays is that it will offer slightly less penetration than the solid shot.

8.9.1. In **Panzer War** all full size solid shot projectiles are considered to be AP. That is AP, APC, APBC, APCBC are just AP.

8.9.2. APCBC-HE and APHE is just APHE.

8.9.3. HVAP, APCR, APDS are also solid shot AP like weapons but instead of being full sized they contain a smaller (sub-caliber) tungsten core and a lightweight sheath. In APDS this sheath or sabot comes off shortly after firing and the core alone will fly the rest of the distance to the target. These shells were rare during WWII and used mainly near the end of the war. For the Germans they were rare in the early and mid years of the war and nearly extinct at the end of the war. While these rounds will penetrate more than the AP rounds they tend to cause less damage because of their smaller size. In addition these shells have a higher tendency to be deflected by highly sloped armor.

8.9.4. **High Explosive Anti-Tank - HEAT** shells can be used by both infantry weapons and tank guns. As they do

not rely on the kinetic energy of their impact to defeat armor they penetrate equally well at all ranges. HEAT shells can also be fired at infantry with effect.

8.9.5. High Explosive - HE shells are used primarily against infantry, soft targets or artillery. Each HE shell has a Kill Factor rating just like infantry small arms. HE shell can also be used against structures like buildings or houses in order to demolish them. When fired at an AFV an HE has some penetration or armor shattering properties.

8.9.6. Canister - Some short caliber German guns fired a canister round. This made the AFV gun behave like a large shot gun. There should be some reference found to identify which vehicles carried canister. The canister round has the same kill factor as a similar sized HE round, but the adjustments to the kill factors are tripled.

8.9.7. When using direct aimed fire an AFV the firing player must announce if they are using a shell type other than AP.

8.10. ROF - It is possible to fire twice in the same turn. Each D10 'firing' roll is not considered a single shot but a quantum of fire as such more than one hit may be scored per firing. To find if an element can fire twice in a turn find the ROF number on the **Vehicle Data Chart** and cross-reference it with the amount of movement a vehicle has done in the turn on the **Multiple Fire Table**.

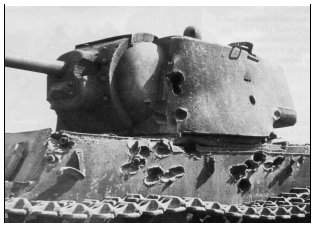
8.10.1. Elements that are permitted to fire twice in a turn must fire in Fire Segment 1 (or 2) then wait and fire a second time in either Fire Segments 3 or 4.

8.10.1. Elements that are permitted to fire twice in a turn cannot fire more than once in any single Fire Segment nor in two consecutive Fire Segments.

8.10.2. Elements that are permitted to fire twice in a turn cannot save their fire allotments up to use in other fire segments or other turns.

8.11. Additional Hits - When firing at a target (single or group) it is possible to score more than one hit with a single D10 'firing' roll. The **Additional Hit Table** list the number needed to be rolled to score additional hits based on the firers ROF (rate of fire). The Additional Hit Table will list the number of additional hits along the top row. Beneath this is the number in excess of the To-Hit number that is needed to score additional hits. The number along the left column is the number needed to score a single hit.

Example: A Sherman with a 75mm needs a base 4 to hit a Mark IV at 320 away. Since it is the first shot over 300 and no other modifiers apply there is only a +1 adjustment to this for the actual to-hit number of 5. The Sherman is stationary and has a ROF of **9**. An '8' is rolled to hit. The Sherman scores one hit for having made at least a 4. Looking at the (ROF = 9) table we find that with a basic To Hit of 5 a second hit is scored when a 8 or better is rolled. Thus two hits are scored.



Sometimes it takes a great number of hits to knock out an AFV.

8.11.1. To assist in quickly finding what the multiple hit numbers are some to-hit columns will list scores needed for additional hit in superscript.

Example: In the image to the left the to-hit column listed as $3^{.7.10.}$ means 3 or more gets you one hit. A 7 through 9 will score two hits. A 10 or better will score three hits. For numbers greater than those listed check the Additional Hit Table. Also note the 'As ROF=8' means this only applies to a ROF of 8.

8.11.2. The maximum possible D10 roll is a 15 thus it is possible to get quite a number of hits on a target. And if a 14 were rolled in the previous example this would score 4 hits in a single segment. Also, these hits all take place in a single segment.

8.11.3. Since a target can be a group target it is possible to spread hits to other close adjacent targets. As long as the primary target is the first unit hit, hits can be allocated to other units in the group. If the firer does not have a traversing turret it is allowable to spread hits along a column or pattern of targets as long as they are within 50 of the original target. If the firer has a traversing turret it is allowable to spread hits along a column or pattern of targets as long as they are within 50 of the last target hit. If the firer has an auto-cannon, machinegun or fast turret traverse the distance increases to 75.

8.11.4. If a vehicle moves more than half movement in a turn and fires no multiple hits can be scored.

8.11.5. When using ammunition that has a limited supply players are not forced to use all the additional hits.

8.12. Suppressive Fire - This is fire at a suspected area where the object is to disrupt enemy elements. Suppressive fire takes an entire turn. No multiple hits are scored when using suppressive fire. Roll one D10 per weapon firing. The adjusted to-hit number must be a 6 or less for the range to target at the area chosen. The area affected is the size of a US penny (19mm diameter). Roll one D10 and add 4 to it. If this total is equal to or less than the killpower the entire area is suppressed.

8.12.1. All infantry in the suppressed area cannot move the following turn.

8.12.2. All infantry elements in the suppressed area have their small arms fire power reduced by one the following turn as well as any following fire segments in the current

turn.

8.12.3. All other non-armored elements in the suppressed area have their to-hit number modified by +2 the following turn as well any following fire segments in the current turn.

8.12.4. One die roll is made per gun tube firing suppressive fire. If a '10' is rolled roll per kill factor on the hit element. Thus it is possible to kill or rout while firing suppressive fire.

8.13. HE attacks on Infantry - Infantry targets can be engaged with direct aimed fire. Infantry elements themselves would be very difficult to actually hit and damage with an armor piercing round unless they were riding in a vehicle of some kind. Instead high explosive shell are fired in their general location.

8.13.1. HE shells do not have the same precision of aim as armored piercing rounds. To save space we have not included HE to-hit firing tables for many weapons. Instead either use the firing table for any HEAT shell that weapon may fire. If none are used then the following general to-hit adjustment can be added to the AP firing table.

8.13.2. Most HE shells are +1 to hit over 450 GSU and additional +1 over 900 GSU away.

8.13.3. Hits by HE on buildings, houses, emplacements and revetments can damage them as well as destroy personal and equipment within. Houses and building are considered extremely large targets and are -3 to be hit from all ranges.

8.14. Realistic Firing (Advanced rule) - Certain latitudes are made to facilitate easy of play and to move things along but a more realistic look at the actual location a target occupies can be made.

8.14.1. All firing elements fire only from the position that they are at after all their movement is completed or halted. (This is the same as in the basic rules.)

8.14.2. All elements are fired on only at their end position when fired on at in Fire Segments 3, 4 or 5.

8.14.3. All elements moving a shift move or up to $^1/_8$ of their full potential movement are fired on only at their end position in Fire Segments 1 or 2.

8.14.4. All elements moving ½ move or more can only be fired on at a position ½ or less of their full movement in Fire Segments 1 or 2. This means that as some element approaches a stationary firing element it can be fired on at the halfway position in Fire Segment 1 and at its final location in segment 3. This differs from conventional basic firing where the stationary/shifting element would get to fire at the end position in both Fire Segments 1 and 3.

8.14.5. Elements disabled (in movement) but not destroyed along their path remain at that location for the remainder of the turn (actually for the remainder of the game.) These elements are considered 'moving' in Fire Segments 1 and 2 but not for segments 3 or 4. Thus an vehicle that was to have moved full and only allowed to fire in Fire Segment 4 may now be said to have moved only half movement and is allowed (should it survive) to fire in segment 3. Thus, while it was ordered and intended to move full it could not physically do so.

8.14.6. Elements hit when moving can be 'acquired' if that element is halted by the hit. Hits by other firers on that vehicle that do not actually halt the target cannot claim to acquire the target in that segment. The target is considered to be moving for the entire segment not withstanding the order in which combat is resolved.

8.14.7. Gun Jams - When rolling to-hit and a '1' is rolled then roll a second time to see if this is an 'under'. If the second roll of the D10 is a '1' (-4) then the gun jams and can no longer be fired until it is cleared. If the second roll a '2' (-3) and belongs to any other country other than USA the gun jams. If the second roll is a '3' (-2) and belongs to Italy or Russia then the gun also jams. If the scenario calls for there being limited ammunition supply then if the second roll is a '5' (0) or less then the gun jams. Gun jams can represent a variety of different problems from shells being stuck in the breech to the vehicle being out of ammo. See Section **9.19.9** to see how to clear jammed guns.

8.14.7.1. If the weapon firing is an automatic cannon of 20mm or more with a single crewman the weapon will jam when the second roll is a '4' (-1).

8.14.7.2. If the weapon is has an automatic loader (self-loading) of any kind in a turret of 2 or fewer crewmen the weapon will jam when the second roll is a '4' (-1).

8.15.1. Tilted Firing Positions (Advance rule) - Side-slope has an effect on AFV and their guns. (This is because gun sights are calibrated to the drop of the round at range. When the drop is off to the side the calibration is off.) No AFV may move onto or start a scenario on a side slope of 30˚. The side slope is measured perpendicular to the long axis of the AFV.

8.15.2. Angle of ground perpendicular to the GUN firing

	To-hit modifier
10-15˚	For base To-Hit 7 or more: +1 to hit.
16-25˚	For base To-Hit 4 or more: +1 to-hit.
25-30˚	For base To-Hit all: +1 to hit;
	For base To Hit 2-4: +2 to hit;
	For base To Hit: 5 or more1: +3 To hit

The scale of ground and height are very different. As a result, the angle scale is different. The ground scale is 1:2000, the vertical scale is $^1/_{285}$ and the angle scale is 1:2. That is, a 30˚ measured angle represents a 15˚ angle.

8.16.0. Main Gun Depression - Every AFV's main gun

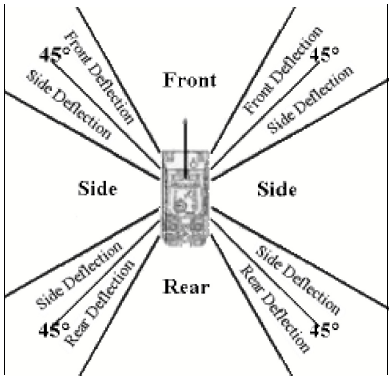
could only be depressed only so far, thus preventing the AFV from firing from positions where the hull is pointed upwards at any large angle. To measure the angle of depression, measure the angle of the ground the AFV sits on (or its equivalent) on the axis of the direction of firing. Then measure the angle required to hit the target. This angle is best measured when your angle level is placed on your laser pointer. Usually this isn't required, but if it is a close call, it can help.

8.17. Firing more than one weapon on a vehicle
If a vehicle decides that it wants to fire more than one of its weapons it must pay a price.
8.17.1. If more than one main gun fires on a vehicle there is a +1 to-hit modifier for each gun.
8.17.2. If machinegun on the vehicle is firing the same fire segment as a main gun there is a +1 to-hit modifier for each weapon.
8.17.3. If a co-axial machinegun fires as well as the main gun both have their ROF reduced by half. Half of 'ac' would be a ROF of 6. In the case of killpower the machineguns killpower would be reduced by one.
8.17.4. If the TC fires the turret top mounted machine gun the same segment as the main gun is firing treat the firing ROF of the main gun just as if the TC is a casualty, i.e. loss of one man of the turret crew, for that segment.

9.0. Vehicle Damage

When an armored vehicle is hit by fire it can become damaged or be destroyed. To understand the rules for this it is necessary to become familiar with the **Vehicle Charts.**

9.1. There are three facings or Aspects of a vehicle listed on the charts. These are front, rear and side. The top of the vehicle can also be exposed to fire when firing from above. The top is further broken down turret top and deck. The hull can be considered a rectangular box with a front, rear and two sides.
9.1.1. Only the front aspect of a vehicle is exposed to fire from within 30˚ of a line extending directly to the front of the center line of the vehicle.
9.1.2. Only the rear aspect of a vehicle is exposed to fire from within 30˚ of a line extending directly to the rear of the center of the vehicle.



Aspects of a tank

9.1.3. Only the side aspects of a vehicle is exposed to fire from within 30˚ of a line extending directly to the side and perpendicular to the front or rear of the center of the vehicle.
9.1.4. There is an area 15˚ wide each side of the 45˚ line from the front or back of a vehicle such that there is a chance that both the front or side aspects, or rear and side aspects can be hit. The 45˚ line is also known as the deflection line because hits from this area are automatic deflections hits on the hull or superstructure of a AFV.
9.1.5. Hull hits from attackers firing within the Front Deflection zone have a 1 in 2 chance of being front hull hits, and a 1 in 2 chance of being a side hull hit (Roll D6 on a "4","5" or "6" it is a side hull hit). Hull hits on an attacker firing within the Rear Deflection zone have a 1:2 chance of being rear hull hits, and a 1:2 chance of being a side hull hit. Note – If a side is hit from the front or rear deflection zone multiply the effective armor basis (of the side) by 1.5 times.
9.1.6. Hull hits from an attacker firing within the Side Deflection zones at the front have a 5/6 chance of being a side hull hit and a 1/6 chance of being a front hull hit. (Roll a D6 on a "6" it is a front hit.) Hull hits from an attacker firing within the Side Deflection zones at the rear have a 5 in 6 chance of being a side hull hit and a 1 in 6 chance of being a rear hull hit. Note – If the front aspect is hit

from the side deflection zone multiply the effective front armor by 1.5 times. If the rear aspect is hit from the side deflection zone multiply the effective rear armor by 1.5 times.

9.1.7. There is no aspect adjustments to turret hits unless the turret region is listed at 'SuperS' (superstructure). Treat SuperS hits the same as Hull hits for purposes of deflection. A side hit on a turret is always a side turret hit. A front hit on a turret is always a front turret hit and a rear hit on a turret is always a rear turret hit. Front, side and rear aspects all end at the 45˚ line.

9.1.8. Cupola. If the tank has a cupola then when the turret is hit at location 10, roll a second D10. There are two sizes of cupolas. A high profile cupola is noted by a capital 'C'. If this number is a 8, 9 or 10 then the large cupola is hit. If the cupola is a low profile cupola (small 'c') then this second die roll must be a '10' in order to be hit. If the second D10 does not achieve a cupola hit then the hit is an ordinary location 10 turret hit. See Location Damage notes for cupola damage. Note cupola armor is the same from all aspects.

9.2. Normally a vehicles top is not exposed to direct fire. There are a few exceptional case where it is. When a top actually is hit there is a top turret and a top deck, each may have different armor basis values. Roll a D6, 1,2,3 is a top turret. 4, 5, 6 is a top deck (engine compartment) hit.

9.2.1. The top is exposed to all Indirect Area fire.

9.2.2. The top can on rare occasion be hit by direct fire of HE or HEAT over 900 for guns under 30 calibers and 1500 for guns of 30 calibers or more. Here a +1 location adjustment is made when determining the hit location when firing these shells.

9.2.3. A vehicles top is exposed to fire from direct fire weapons if the firer is higher than the target by a factor of 25mm per 100 GSU or less distance.

9.2.4. Location 11 is considered to be a top hit. The way to hit location 11 (top) is to roll a 10 for location and have a +1 location adjustment. These are always considered a deflection hit unless using HE.

9.3. The armor of each location on an AFV is assigned a value. This value is a representation of that armor basis in centimeters, adjusted for slope, curvature and armor quality. When an attack does score a hit on an AFV roll one D10 per hit. Consult the Vehicle Chart to find the location and the armor basis at that location. It is this armor the shell must defeat to penetrate the vehicle. When a top is roll a D6. A 1, 2, 3 means the turret top is hit. A4, 5, 6 means the deck of the engine compartment is hit. Roll the respective damage in each case.

9.3.1. Some locations have two values separated by a slash ('/'). This means that there are two possible armor values for the location. Roll a D6 for each such hit at these locations. Rolls of 1, 2, or 3 means the first value is to be used. A 4, 5 or 6 means the second value is to be used as the armor basis. When this is a side aspect then locations 1, 2, 3 is the front compartment of the hull, 4, 5, 6 is the engine compartment.

9.3.2. Penetration of the track armor basis does not penetrate the tank itself but can cause track mobility failure. If the track is penetrated roll a D10. If the number is two less or better than the 'D' (Destruction) factor of the shell the track is broken and the tank suffers a track loss.

9.4. The maximum normal penetration a shell will penetrate is listed on the Weapons Tables. The penetration values are listed in decreasing order as range gets longer. Underneath the armor value is the maximum range that this penetration is valid. Determine the range from firer to target. If this range falls under the listed range band the resulting penetration is the maximum normal penetration. The maximum penetration may not be the ACTUAL penetration for each shell, however. To find the actual penetration some adjustments may be made. Roll a D6 and adjust this factor per the **Variable Penetration Tables.** If the actual adjusted penetration equals or exceeds the armor basis of the vehicle's location facing hit then the vehicle has suffered a penetration.

9.4.1. There are several **Variable Penetration** tables. The table that is used is dependent on the type of shell used in the attack. There are tables for ordinary AP and APHE. Another table is used only when the shell is APDS, APCR or HVAP. A third table is for attacks by HE shells.

9.4.2. There are separate tables for deflection or rounded armor. Check the Variable Penetration Tables for the penetration. There are reduced armor penetration when striking rounded and deflection armor.

9.4.3. Anti-deflection armor. This is armor that is deflection armor within 30˚ or less of the front but is not deflection within the deflection zones. Mostly to represent armor plates that are at an angle to the front and sides. This is denoted by an '**a**' next to the armor.

9.4.4. Highly sloped armor (45˚ or more) is noted by being underlined in value. This will cause a higher chance of deflection than vertical armor. There is a special Variable Penetration Table column for this.

9.4.5. Armor that is highly curved or rounded tends to cause most shells to ricochet. This armor is noted by a small 'r' (rounded) next to the armor value. Subtract one from the D6 roll. Armor that is curved in two directions has a small 'rr' (doubly rounded) next to the armor value. Subtract two (-2) from the D6 roll.

9.4.6. After adjusting the die roll and using that to adjust the amount penetration an armor penetration number is

derived. If this number equals or exceeds the armor of the location rolled the vehicle is penetrated. See Location Damage Chart to determine the damage the vehicle suffers.

9.4.7. Variable Penetration die rolls are only used when trying to determine if the armor of an AFV, fortification or gun shield is penetrated. Hits on soft targets (unarmored) are handled differently and is matter of fragmentation and concussion. Note - hits on units or vehicles that are partly armored and partly soft (portee) are handled with special rules.

9.5. The Location Damage Chart lists the different damage done to a vehicle by a penetrating shell hit. This damage increases when the shells are larger or more destructive explosive filler. There is a Location Damage chart for AFVs and one for artillery pieces.

9.5.1. The destruction factor imparted by a shell is listed under 'D' on the gun table. When the damage at a location list something as 'D' this means use the 'D' number from the shell's table. If the die rolled is equal to or greater than this number then the corresponding damage occurs to the AFV. Damage that shows a 'D+1' the D-number is increased by one. This means the D10 roll must be higher to cause damage, thus the chance of damage is lower. Damage that shows a 'D-1' the floor destruction number is reduced by one (higher chance of damage). Remember - The D10 die roll is not modified, it is the base number that is raised or lowered.

9.5.2. Damage is allocated by the aspect and vehicle location penetrated. Each location has different damage type factors. A D10 may be rolled for fire and one for mobility. Or several other damage types. Roll a D10 for each damage type listed. To speed up play use 4 D10 dice in one roll.

They can be colored as follows:

Red = fire;

Green = Mobility/Gun;

White/Tan = TC (Tank Commander);

Blue/Black = Stun. (Not all will apply but it is just as easy to roll 4 dice as two so this just saves time if one gets in the habit.)

9.5.3. Damage from penetrating hits on the front aspect of an AFV will be rolled on the Front Hull column. Damage on the rear aspect of a hull will be rolled on the Rear Hull column. Damage from penetrating hits on the turret will be rolled on the Turret table. Damage from penetrating side hits are handled differently. Roll a D6 for each penetrating side hull hit. If a 1 or 2 results use the Front Hull table, a 3 or 4 use the Turret table, a 5 or 6 use the Rear Hull table.

9.5.4. Tanks and most AFVs have their engine in the rear, but a few have it in the front or mid-hull. The way to check this is to look at the row labeled 'Top'. If 'T' is listed before 'D' then the turret is first. If 'D' is listed first then proceed as if the engine is in the front and the turret or superstructure is in the rear.

9.5.5. More Detailed Side Locations - Some players want even more detail in their side hull locations. In this instance the hull will be divided into three compartments from the side: Roll a D6- 1,2 is the drivers compartment - treat as a front hull; 3-4 is the fighting compartment - treat as a turret; 5-6 is the engine compartment - treat as a rear hull. For AFVs like the Hummel or Wespe with a mid-engine the 1-2 is the driver compartment; 3-4 is the engine compartment; 5-6 is the fighting compartment.

9.6. Vehicle on Fire - If when rolling for fire the resulting D10 total is greater than the shells D-number the vehicle catches fire and the ammunition or fuel explodes immediately destroying the vehicle and eliminating it from play. If the D10 total is exactly equal to the D-number then the vehicle catches fire but is not destroyed.

9.6.1. If a vehicle catches fire and does not explode then the vehicle must test in the Miscellaneous Details Phase each turn it is on fire. Roll 1 D10 per burning vehicle. If the crew did not bail out and a '0' or less (remember 'Unders') is rolled then the crew has put out the fire or for some other reason the vehicle is no longer burning. If a 8,9 or 10 is rolled the vehicle immediately explodes and is destroyed.


Use colored cotton to simulate fire and smoke.

9.6.2. Modifiers - The chance to roll to Damage in the case of fire can be modified. If the vehicle is listed with a -1 f this means the base chance of fire is lowered by one on the fire die roll.

Note - To mark an occupied burning AFVs place a red colored marker next to it. If the vehicle is destroyed place black or brown colored cotton (smoke) on the vehicle to mark it destroyed. Remove all other pins or markers as they are superfluous at this point. In a large battle it may be best to just count all burning vehicles as destroyed as to save time.

9.7. Track Damage - Vehicles suffering this damage cannot move from the point of the hit. They can however pivot in the following turns. Roll one die (either odd/even or high/low) to determine which of the tracks is damaged. Each hit on a track will have a 50:50 chance of hitting the same track. Additional hits on a damaged track cause no additional damage.

Note – In the time scale of the game the track cannot be repaired.

9.7.1. Two track damage results on different tracks result in mobility loss. Roll odd/even or high/low to see which

track is hit.
9.7.2. More than one damage result on the same track has no additional damage or crew morale effect.

9.8. Mobility - Damage to crew drivers, engine, drive-train, transmission, fuel system or to both tracks can result in mobility incapacity. Vehicles suffering mobility loss cannot move the remainder of the game. For action involving more than a dozen tanks on either side use the following rule: A mobility kill from a front hull penetration will eliminate the hull machinegun, i.e. drivers compartment destroyed.

9.9. Gun - Main gun destroyed. The vehicle can no longer fire its main weapon. This usually is considered the turret weapon if a vehicle has one. Some vehicles have a sponson gun (M2 Lee). If penetrations occurs at location marked 'Sp' the sponson gun can be destroyed. If a side hull penetration results in 'Turret' damage the gun damage that may result applies to the sponson gun and not the turret gun.

9.9.1. For vehicles with multiple turrets the main gun is the gun in the central turret. Secondary turrets are marked as either T2 or T3. When penetrations of the side that result in 'Turret' damage there would be a 1 in 3 chance that the turret would be the secondary turret.
9.9.2. For vehicles with a secondary main gun or weapon other than machinegun in its hull/sponson roll a D10 to kill this weapon. Use the D10 that is normally used to kill the 'TC' (the white one) to destroy the hull weapon.
9.9.3. Hits on AFVs at location '9' may result is just a gun hit. If the front or side aspect of a turret is hit at location '9' then roll a D10 again. For any size gun if this second roll is again a '9' then the gun barrel has been hit directly. For guns greater than 60mm and this second roll is a '9' or '10' then the gun barrel has been hit directly. Roll to penetrate the gun barrel 'armor'. **The armor is considered to be ½ the caliber size but not more than 5cm.** If this is penetrated the gun is destroyed but no further damage happens to the vehicle. Roll also as to stun.
9.9.4. If the AFV also has a sponson (SP) gun or a second turret and location '6' at that location and aspect can be hit then this results in a possible gun barrel hit on that gun. Roll a second D10 to see if the gun barrel is hit directly. For any size gun if this second roll is again a '9' then the gun barrel has been hit directly. For guns greater than 60mm and this second roll is a '9' or '10' then the gun barrel has been hit directly. Roll to penetrate the gun barrel 'armor'.
9.10. Tank Commander (TC) The command personnel of the AFV is killed. The vehicle can no longer sight as part of a group and is -5 for its own sighting and no longer receives a 'cupola' bonus when buttoned up. AFVs without TC always lose initiative and must move before other elements with TCs. Vehicles losing their TC are always considered buttoned up unless they are open-topped.
9.10.1. 3-man turret/gun compartment. Tank now has a 2-man turret. When firing main or turreted weapon has a +1 to-hit adjustment and has normal ROF cut to ½ normal (rounded up).
9.10.2. 2-man turret/gun compartment. Tank now has 1-man turret. When firing main or turreted weapon has a +2 to-hit adjustment and has ROF cut to ½ normal (rounded down).
9.10.3. 1-man turret/gun compartment. AFV can no longer fire the turret weapon. If the vehicle has no other weapon other than MGs then it acquires a Gun loss marker too.
9.10.4. Any hit by direct fire on an open topped or unbuttoned vehicle on location 10 will kill the AFV's TC.
9.10.5. A hit with HE on locations 8, 9 or 10 by direct fire on an open topped or unbuttoned AFV will kill the TC.

9.11. Hull Gun (HG) In most games this casualty is not used. When playing skirmish actions the hull gunner can be included in play. This person is also the radio operator in many vehicles. This could be the sponson gun or the hull. As per 9.5.1 the white die is used to determine if this crewman and/or weapon is eliminated. **9.11.1** When hulldown of 5 or more the hull gun cannot fire at a target below the elevation of the vehicle. This is because the hull gun is considered to be at location #6.

9.12. Passengers. (Pas) Some armored vehicles transport passengers. These are non-crew elements. They may be a squad or a gun or weapons crew. If a penetration occurs there may be a roll to determine if this element is eliminated. If it is remove it from play. Loss of passengers has no effect on crew morale for bailout purposes.

9.13. Some kind of notation or counter/marker/bead should be used to denote the various damage or problems a vehicle has suffered. This allows easy reference and speeds play. But, it does alert your opponent and it may be more interesting to just write down the damage in any kind of vehicle log one is using.
These are just suggested markings:
9.13.1. Black, brown and red Cotton 'smoke' can be used to denote burning or destroyed vehicle. Or turn them on their side.
9.13.2. Green pin can mark tracked AFVs. (Single track hit. Vehicle may still pivot.)
9.13.3. Pink pin can mark immobilized vehicle or one in

which both tracks are disabled.
9.13.4. Black pin can mark AFVs with destroyed gun.
9.13.5. White or brown pin can mark AFVs with TC loss.
9.13.6. Red pin can mark AFVs a with jammed main gun.

9.13.7. Blue pin can mark a stunned AFV.
9.13.8. Yellow pin can mark a bailed out AFV. (remove other pins).
We use colored counters looted from Risk games in our play.

9.14. Vehicle Crew Morale After each combat segment that a vehicle is damaged there is a chance that the remaining crew members will bail out of the vehicle, thus removing it from play.
9.14.1. Each type of damage has a bailout factor assigned it. For each vehicle tally the factors that apply into single sum. The resulting number is the chance per D6 of bailing out. The factors that must be totaled are given on the **Vehicle Bailout Table**.
9.14.2. If the crew passes its bailout roll it will remain with the vehicle until more damage is done the vehicle and where another test is required.
9.14.3. All damage in terms of factors are additive except fire damage. If a vehicle is on fire count only the fire factor to test for morale. Track damage is partially additive. One track damage counts as a track damaged, but two track damages to different tracks counts as mobility damage. Track damage and mobility damage is only just mobility damage.
9.14.4. If the total bailout factor total is six or greater and a '6' is rolled the tank crew becomes fatalistic and is battle crazed. They do not have to roll again to bail for another 6 turns. They also do not have to follow orders to withdraw or remain stationary. They may move toward the enemy and even ram if another vehicle appears within 200 of their front.
9.14.5. A tank or vehicle crew suffers morale loss for a type of damage only once. If repeated attacks result in damage to already destroyed components (gun, mobility, TC) the tank crew do not test to bailout for that loss again.

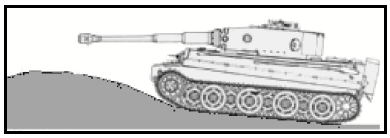
9.15. Stun - is a combination of shock, concussion, disorientation, damage and fear. It may be some kind of temporary damage or malfunction. It may be a wounded crewman who needs immediate medical attention. When an AFV is hit by any kind of shell, whether or not the armor is penetrated, the vehicle may become 'stunned'. Every Area fire 'near hit' receives a stun roll. All gun shells have a stun rating. This is listed under 'S' on the gun tables (Right next to the 'D' for destruction rating. Roll one D10 per hit. If this number is equal to or greater than the stun rating of the shell the vehicle is stunned.
9.15.1. If the vehicle suffers any damage, i.e. mobility, TC, main gun, hull gun, add +1 to the morale roll.
9.15.2. A stunned AFV may not move nor fire nor sight new targets nor communicate with other units until it becomes unstunned.
9.15.3. An AFV that becomes stunned in one fire segment of a turn may not fire in following fire segments of that turn. As all fire in a single Fire Segment is simultaneous it may fire in the same Fire Segment it was stunned in.
9.15.4. An AFV that moved and was stunned at a position along its path but not at the end point must be placed back at that point. It then may move no further than 10 GSU from that point. (Basically it coasts to a stop.)
9.15.5. Vehicles that are both soft and armored suffer stun results if struck in their armored locations.
9.15.6. Anti-tank guns with armored gun shields can be stunned when struck in their armored locations.
9.15.7. Un-Stun To un-stun roll one D10 per stunned unit during **Miscellaneous Details** phase. If the unit was hit by any shells during the turn only a 9 or 10 will un-stun the unit. If no hits were scored on the stunned element then a 8, 9 or 10 will un-stun.
9.15.8. It is easier to stun lighter elements and harder to stun heavy AFVs. Add +1 to the stun D10 roll for units of weight class of 1 or under. Subtract one (-1) from the D10 stun roll of AFVs of weight class 5 or higher.
9.15.9 Un-Jamming - Guns that are jammed can be cleared (un-jammed). For every un-stunned gun that is jammed roll a D10 in Final Detail phase. A '10' will clear a jammed gun. If the guns mount (AFV, trailer, etc.) did not move in the turn a, '9' or '10' will clear the jammed gun.

9.16. Critical Hits - Occasionally a shell will hit a location such as a turret ring, welded edge, machine gun port, or periscope such that it will be able to penetrate far greater than it would under normal circumstances.* When rolling for actual penetration for the variable penetration die roll and the final (Overs) D6 roll is a seven ('7') or greater then a **Critical Hit** has been scored.
9.16.1. A roll of '7' results in a penetration of +1 normal penetration.
9.16.2. A roll of '8' results in a penetration 50% greater normal penetration.
9.16.3. A roll of '9' results in a penetration 100% greater normal penetration.
* Note - Modern research shows that there was a great variety in the quality of armor during the war. Even in the same AFV vehicle model. Much armor was considered flawed to one degree or another. Also, there is an 'edge effect' to armor. If struck near the edge of a plate the armor does not protect as well as near its center. All these things can be reasons that a shell which might otherwise fail does penetrate.

9.17. Hull Down - Hull down or hull defilade is a position such that a vehicle is sufficiently behind a hill, ridge, berm or some other impenetrable obstacle that its hull is behind toward enemy ground elements while the turret is still

exposed. This enables the vehicle, usually an AFV, to fire its weapons while protecting most of is mass.

9.17.1. Hull Down is measured in factors. These will be from 3 to 6. Each factor directly relates to the protection of vehicle locations per the Vehicle Damage Chart. A hull down factor of '5' will protect locations 1 through 5.



Hull down behind a hill berm

Use a very small D6 to indicate the hull down factor of each hull down tank.

9.17.2. When moving into a hull down position for the first time roll a D6 for each vehicle. A (1 or 2) is not considered hull down for purposes of sighting but still protects those locations from hits. Place this small D6 with the hull down factor next to the model after movement to indicate hull down factor.

9.17.3. After the first turn of attempting to find a hull down position the vehicle may shift to a better hull down position. The player chooses the hull down factor for his vehicle after the first turn.

Note - There should be some agreement between players on the maximum hull down obtainable in some locations. A vehicle could not get hull down 6 behind a small garden wall or in a shallow ditch. Also note that if the vehicle is positioned in steeply sloping back position it may not be able to fire on a lower elevation to the front.

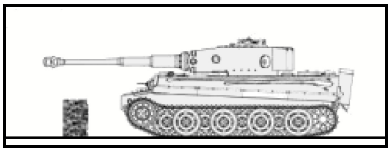
9.17.4. Some hull down positions are not adjustable hull down positions. Places behind bumps or dips in a road, rubble heaps, walls, or road embankments are not variable hull down positions. They may offer a D6 of protection but a vehicle can not adjust its position to get a better hull down factor. Whatever they rolled for hull down factor remains the protection afforded that position.

9.17.5. When firing at a hull down AFVs there is no additional to-hit modifier. However, the locations that are 'protected' have their armor increased. If the attacking shell penetrates the combined protection and hull (or track) armor then damage can be done.

9.17.6. Hull down protection will vary depending on what is providing the hull down.

9.17.6.1. A hill or ridge crest or gully sidewall will have virtually infinite protection.

9.17.6.2. A man-made berm, levee or debris pile will offer a random 10-60 cm. (D6 x 10) of additional protection.



Hull down behind a stone wall.

9.17.6.3. A hull down location provided by a brick or stone wall will offer 2-12 cms (2 x D6) of protection.

9.17.6.4. Some tanks come with secondary guns. These are mounted in the HG position. Thus if the hulldown factor is equal or exceeds location 6 the gun's LOS and line of fire is blocked.

9.17.6.4. A hull down location provided by a cinder block, or dirt wall will offer 1-6 cm. (D6) of protection.

9.17.6.5. In addition every penetration of a 'wall' type protection add a deflection adjustment (-1) to the Variable Penetration roll. This could be compounded by the armor impacted being deflected.

9.17.7. Hits by HEAT shells or warheads on hull down protected location add an additional 10 cm. of protection for a spaced armor effect.

9.17.8. Playing on modeled terrain - If playing on 3D terrain boards or sand tables, the problem of which location of a tank that can be hit by a round is a little more difficult. We use the following rules (if the player has a better solution, use it and tell us about it!).

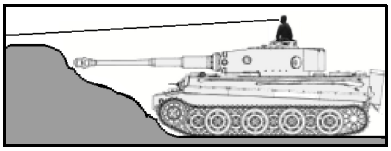
To determine the part of the target that can be hit, run a laser light beam of a small laser pointer over the top of the firing gun (either AFV or ATG). Bounce the beam off the target and estimate the locations that are not concealed from the firer. Use features on the target to help. If the target's tracks are hidden by the ground or a wall, then the tank is at least "hull down 4". This means that locations 1-4 are cannot be hit. If the entire hull is not illuminated, then the vehicle is "hull down 6". If where the gun meets the gun mantle is not visible, then the target is **turret down**. (Note that would mean the gun can not be hit nor can it fire at the lasering element as firing is measured from the center of the element and not the end of the barrel.) For hull down values that are some where between these clear cut case roll a D6 to find the hull down value. Don't forget while a vehicle is moving its hull down value would be changing from moment to moment so each shot at a moving hull down vehicle may have a different hull down rating.

If two ends of the target have different hull-down values, average them as you are shooting at the center of the casting and not the model itself.

While the firing gun doesn't fire from the top of the tank, but there aren't many alternatives. On the other hand, gun rounds do travel in an arc, and thus reduce the amount of protection offered by the ground, especially if the cover is substantially in front of the target. Granted, these two effects don't really cancel each other out, but one does help ameliorate the other.

One still has to assume during the **first turn** of maneuvering into a hull down position the vehicle will not find a proper hull down position. So even though the 1000 foot general can position his tank piece so that the laser only touches the turret a D6 roll has to be made for a random hulldown value.

9.18.0. Turret Down - Positions such as ravines, trenches, crests, and specially constructed defense positions that provide concealment and protection to the entire vehicle can be turret down positions. This is a position such that the entire vehicle is out of view but a person in or atop the vehicle can still see the nearby terrain. Here the vehicle commander may view potential targets and immediately enter the vehicle which would shift out of its hidden position to a position where it could fire.


Turret down behind high ground.

9.18.1. A vehicle moving from a turret down position to a hull down position does not have to roll a D6 for a hull down factor number provided the vehicle was in the turret down at least one full turn.
9.18.2. A vehicle approaching a position that it wants to go turret down at must halt before it moves to the turret down position. It then must take one turn and 'shift' move to a turret down position.
9.18.3. Once in a turret down position a vehicle may go from turret down to hull down and hull down back to turret down with just a shift move turn after turn. A stationary unbuttoned AFV may be declared 'turret down' and can see over a crest of a hill by placing a figure on top of the tank and spotting from the head of the figure.

9.19. Dead Zones - Vehicles that are in hull down positions may have a dead zone in front of them. This is a zone where they may not fire on targets in this zone. This is because their gun may not be able to depress enough. The dead zone is dependent on the gun depression ability of the vehicle and the slope the vehicle is positioned on. The dead zone is for 25mm or less in elevation below the vehicle.
9.19.1. Use the following Chart to determine the dead zone of a vehicle.

Type	per hulldown factor	
	1-3°	4-6°
German, UK, USA open top AFVs	50x	100x
German, UK, USA closed top AFVs	100x	200x
All other AFVs including Russian tanks and AFVs.	200x	not allowed

Example: If the back slope of a hill that a hull down Sherman tank is on is under 3 degrees then the dead zone is 100 times its hull down number. The dead zone is only for lower elevations.
9.19.2. The dead zone is multiplied by each 25mm below the hulldown vehicle. So if the target is 50mm below vehicle then multiply the dead zone by two.
9.19.3. There is no dead zone if a vehicle is positioned on level ground behind small non-hull down positions.
9.19.4 The dead zone for a HG hull mounted or sponson mounted secondary gun is 200x the hulldown factor.

9.20. Aimed Fire (Optional Rule)- In order to try to hit specific vital location on a AFV it is possible for the firing element to try to aim its shot. In Panzer War there are only two types of aimed shot. That is to aim 'high' or aim 'low'. When aiming high it increases the chance of hitting a turret. When aiming low it increases the chance of hitting a track. Aiming high on a hull down vehicle is permitted.
9.20.1. Vehicles or guns with Green crews cannot use Special Aimed Fire. All other crew types can.
9.20.2. The player firing must declare if the gun on the element he is playing is going to aim 'high' or 'low'. If he doesn't declare this it is assumed the normal firing calculation is done.
9.20.3. Aim fire must be declared before rolling the die roll. Also Aimed fire cannot be used on disappearing targets nor on targets coming into sight (First Sight) the same turn.
9.20.4. To aim fire the firing element may not move. It may not even shift move.
9.20.5. The first turn of aim fire there is a '+2' To-Hit modifier added to the normal to-hit calculation. Aim fire at the same target in subsequent turns has only a '+1' To-hit modifier.
9.20.6. If a hit is scored while aiming 'low' roll a D6 instead of a D10 for location of hit. Thus locations **1-6** will be the only ones hit.
9.20.7. If a hit is scored while aiming 'high' roll a D6 instead of a D10 for location of hit. Add +4 to this number giving the location that is hit. Thus locations **5-10** will be the only ones hit.
9.20.8. If the target of aimed 'high' roll scores a hit on location '10' roll a D10 to see if the cupola is hit. The cupola hit rules are the same for aim fire as normal fire.

9.21. Accuracy at short range (Advanced to-much-detail Rule) - At very close range the to-hit modifiers for aimed fire and size of target does not affect the aiming ability of a firing element as much as they do at medium and long range. For ranges up to 300 and where the base to-hit

number would be a '1' the adjustment for aimed fire or vehicle size is reduced by half rounded down.

Example: This would mean where the base to-hit number was 1 up to 400 the adjustment for aimed fire would only be +1 up to 300 and +2 beyond.

Example: This would mean where the base to-hit number was 1 up to 250 the size to-hit modifier for a size -1 vehicle would be 0 up to 250. It would still be +1 to hit beyond 250 where the To-Hit number is 2 or more.

9.22. Hits on Artillery elements - A hit on an anti-tank guns or other artillery piece is handled somewhat differently than one on an AFV. A gun can be hit by direct aimed fire just like most large objects. They can also be destroyed by the fragmentation of high explosive HE shells without a direct hit.

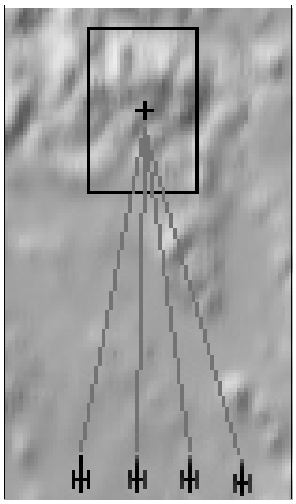
9.22.1. Artillery pieces and indeed anti-tank guns are usually small. It makes them harder to hit. Check the **Artillery and Anti-Tank Gun Data** table for specific sizes of artillery pieces.

9.22.2. While most artillery pieces did not have gun shields most anti-tank guns did. The hits on the gun shield must penetrate to do damage to the crew or gun.

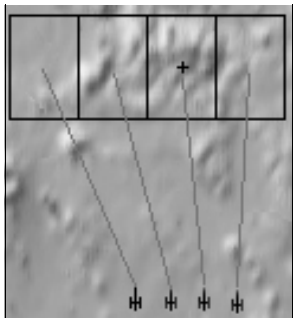
9.22.3. The **LOCATION DAMAGE ON TOWED ARTILLERY** table should be consulted when determining hits and damage on anti-tank, towed artillery or anti-tank guns. This is just like the Location Damage table for AFVs but for artillery pieces.

9.22.4. If a hit from direct fire has been scored on a towed weapon roll a D10 for location per this chart. In some cases the gun shield may be hit. In others only a near miss is scored. Roll a D10 per infantry killpower vs the crew to kill or rout them. Unlike a tank crew, routed infantry elements including gun crews can be rallied. Treat gun crews like infantry elements in terms of rally or dispersion. Note – guns without gun shields are considered to be 'in the open' unless dug-in or in woods/buildings/rubble. Crews with gun shields are not considered to be 'in the open' for being driven to ground or suppression.

10. Artillery - Artillery fire is usually fire directed at group of elements in an area rather than an individual element as in aimed fire. All elements within this area stand about the same chance of being hit directly. Unprotected and unarmored elements have a much better chance of being destroyed by fragmentation and blast than armored targets.



Closed sheaf artillery concentration



Open sheaf artillery fire.

10.0.1. Artillery is usually organized in batteries of 2 to 9 guns or rocket launchers. All guns in the battery are commanded by a single artillery battery command element (BCP). Without this command element the battery could not fire as a unit. Since artillery elements fire as a group they can coordinate their fire to cover an area defined around a single point. This point is the center of the area. The area will be defined by positioning this center point. The center can be marked by a pin, chit or small (20mm) cotton ball (smoke round).

10.0.2. When weapons area fire they usually have a good supply of ammunition as the effectiveness of area fire is as dependent on the quantity of shells fired as the accuracy of the fire.

10.0.3. All elements in an artillery battery must be located within 150 of the artillery command element. Artillery elements can be placed no further than 25 GSU from each other. The usual number is 10 to 20 GSU. Batteries cannot be placed more than 150 from other batteries in their artillery battalion if the artillery is on the defense.

10.0.4. Batteries may be designated as 'off board' where they are not physically on the game table. But some sort of distance from the game edge must be given. This distance must be more than 1000 GSU. These artillery batteries may still fire on to the game table but must be communicated with via radios or telephone lines to interact with on board units.

10.0.5. Batteries communicate between each other through the use of land lines (telephone). If these fail flag or radios can be used. However, then communication is not as sure.

10.1. When attacking with artillery the area under attack is called the Area of Effect (AoE). Or, alternatively the beaten zone. The dimensions of this area are dependent on both the types of shell, rockets or mortars being fired and the size of the shells being fired. This shape is either a square or a rectangle. If it is a rectangle the long axis is along a line toward the firing battery.

10.1.1. Area fire can come from high explosive shells, auto-cannons and even HEAT rounds. AP rounds from cannons have no area effect.

10.1.2. The area of effect is defined by having an axis and a width. The axis is positioned toward the firing battery along the line of fire. The width is perpendicular to this axis.

10.1.3. All elements, friend or foe alike, in the AoE are under attack in area fire. They are all treated the same as targets. In that Area Fire can scatter and may fall on friendly elements is one of the potential dangers of Area Fire.

10.1.4. Single cannons or machine guns when firing area fire in a single fire segment and not setup prior to game play have an AoE the size of a US penny (19mm diameter circle).

10.2. While there are many different ways guns can combine their fire and spread their area, however we only allow two in Panzer War.

10.2.1. The first type is called the ***closed sheaf***. This type of attack all elements fire into a central area and attack all elements in this area. The **Artillery Area Fire** Table defines the Closed Sheaf size.

10.2.2. The other type is called the ***open sheaf***. This is where the elements attack separate areas along side one another. This has a wider AoE but the chance of a hit is far smaller. For open sheaf fire each gun is allowed to fire in an area of the size defined by the closed sheaf fire. These areas are all adjacent and spread out next to a central area. The chance to hit within this area is the same as if the artillery battery had only one gun.

10.3. To-hit with Area fire -For the first turn of fire or if the center of the area (CoA) was moved in the turn then for every element (tank, AFV, squad, team, gun) within the area rolls one D10 per gun or per 4 rockets*. If a '10' is rolled then a possible hit (Ph) is scored.

Example: If a 4 gun battery were to fire closed sheaf there would be 4 D10 rolls on each element in the closed sheaf AoE.

Example: If a 4 gun battery were to fire area fire in the open sheaf pattern only one D10 would be rolled per element in the AoE. (The total area though would be 4 times larger.)

10.3.1. To graduate the possible hits on vehicles or artillery pieces into actual hits (Pa) another die roll (D10) must be made. Roll one D10 per Ph made. For all AFVs or elements with locations if this second roll is either a '1' or '10' then an actual hit (Pa) is scored. If a '1' or a '10' is the number roll a D10 again for overs or unders:
A '0' or less means the track has been hit.
A '1' means location '2' of the side aspect has been hit.
A '10' means the turret top (Top T) has been hit.
An '11' or higher means the top deck (engine deck) has been hit.
10.3.2. Next roll to penetrate armor and then to damage the object. The penetration is almost exactly like a normal direct fire hit penetration except HE uses a different variable penetration table. If a penetration is scored roll to damage. Then unless a track is hit, roll to stun.
10.3.3. If a hit is scored on the target (either locations 1 or less or 10 or more roll to see if the gun is damaged by the blast.) Roll a D10 and if a '9' is the rolled then it must be backed up by another roll of a '9' or '10' in order for the hit to be a gun barrel hit. If this is the case then see if the HE penetrates the gun barrel to destroy it. See 9.9.3. for gun barrel penetration and damage. If the AFV has a sponson gun or has multiple cannons then a die can be rolled to determine which gun barrel was hit.

10.3.5. All AFVs that come under HE attack that can button up must do so. AFVs that are open topped and that come under HE area fire will have a '+2' to hit modifier added to their fire in the following turn.

10.3.6. For infantry and soft-targets that have suffered a Ph a second roll per Infantry Killpower is made against the target.
10.3.7. For Ph on structures subtract the Infantry Killpower of the shell from the structure strength factors. When this goes to zero or less the structure may collapse.
10.3.8. Infantry and soft targets are suppressed if the to-Kill die roll is +4 or less above the adjusted Kill power attack. Suppressed elements cannot move the following turn and have a reduced fire combat value for that turn.
10.3.9. Ph hits on other elements - Roll one D10 for each possible hit on towed guns or other elements.
10.3.9.1. If a '10' is scored the element has been hit directly. If there is overhead protection for the element determine if the HE shell penetrates the protection as per armor penetration. If it does then:
1) If a gun, howitzer or rocket launcher roll on the Damage Chart.
2) If any other kind of element is hit roll vs HE killpower without any deductions for protection.
10.3.9.2. If not an AFV but an infantry element use this second D10 roll as the HE Killpower roll vs the target but with deductions for protection as in (dug-in, gunshield, etc. apply).
10.3.9.3. If a **soft vehicle, portee,** wagon or other piece of equipment suffers a Ph add **+2** to the HE killpower factor. Roll one D10 per Ph hit. If the adjusted HE killpower or less is rolled the vehicle is destroyed.
10.3.10 Structures can be rated in terms of modules. A small house may be one module, larger buildings may be up to 6 modules. Each module may be rated from 2-12 (2D6) strength points. The strength is the number of HE damage factors that the module may absorb before it collapses into rubble. All Ph to a building turn into Ah, i.e. there is no additional to-hit needed to apply the HE damage effect to the structure.
10.3.10.1 Machineguns and armor piercing shells do no cause structure damage.
10.3.10.2. Direct fire HE will cause structure damage if they penetrate the walls. A wood house has virtually no armor value for the wall. Terra Cotta walls have armor of 0.2-0.4, Brick walls have an armor value of 0.5-0.8. Stone walled houses have an armor value of 0.7-1.

10.4. Concentrated fire - If the artillery battery was set up prior to the start of the game and has not moved it may fire concentrated fire. In concentrated fire the area of effect may not have moved from last turn. In concentrated fire roll 2 D10 dice per gun or artillery piece. An artillery battery is only permitted to fire up to 4 turns of concentrated fire per game.
10.4.1. For super heavy artillery rounds roll 1 D10 per every 100 lbs. of shell weight.

10.5. Direct Area Fire - Area fire from a mortar, gun, howitzer, machine gun auto-cannon that can sight the target falls under the category of Direct Area fire. The area covered by this fire must have a aiming point. This point may be the center of a group of target elements or it may be a single element. This point must be in sight of the firing weapon. This point is the point of aim (PoA).
10.5.1. Direct area fire may be done by a single weapon or a battery of weapons. To fire as a battery of weapons the firing elements may not move in the prior 6 game turns nor in the current game turn. They must all be within 25 of each other.
10.5.2. Guns or howitzer firing direct area fire must be greater than 450 from the target.
10.5.3. Auto-cannons and machineguns have no minimum range to fire Direct Area fire, but no friendly unit may be within 19mm of the edge of this area.
10.5.4. Mortars may fire Direct Area fire up to their maximum range and down to their minimum range.
10.5.5. The center of area (CoA) of the Direct Area fire may scatter at ranges over 600 away.
10.5.5.1. Roll one D10 per battery firing Direct Area fire

at ranges over 600 GSU. A '9' or '10' and the CoA does not scatter at all. It is placed exactly at the PoA. For numbers 1 to 8 the center will scatter as per the Compass section 1.3 direction. The distance of scatter is dependent on the range to the intended point of aim.

10.5.5.2. If the point of aim is 601-900 away the scatter distance of the CoA is 5 x D10 roll (in GSU) from the PoA.

10.5.5.3. If the point of aim is 901-1800 away the scatter distance is 10 x D10 roll (in GSU) from the point of aim.

10.5.5.4. If the point of aim is 1801 or further away the scatter distance is 20 x D10 roll (in GSU) from the point of aim.

10.5.6. Direct Area Fire takes place only in Fire Segment 4.

10.5.7. After the first turn of Direct Area fire may be corrected or changed up to 150 GSU per turn. Correct the area by moving the center.

10.5.8. Direct Rocket artillery scatters to a much greater degree than other types of artillery. It always scatters to the same degree as Indirect Fire scatters.

10.6 Indirect Area Fire - Area fire from a mortar, gun, howitzer battery that cannot sight the target falls under the category of Indirect Area fire. This fire is directed by a second party, usually but not limited to a forward artillery observer (FO). The area covered by this fire must have a point of aim. This point may be a map reference or the center of a group of target elements or it may be a single element. This point must be in sight of the controlling party.

10.6.1. Duration – The duration or turns of pure artillery fire is determined depending on the complexity the players want to employ. In the basic artillery model the duration will be a maximum of 6 consecutive turns. Once each turn communication link must be diced to be maintained or the fire does not happen. In the advanced artillery model the number of turns is determined by the size and kind of target the observer can view. This is also partly dependent on nationality of artillery and caliber of artillery. Linking only has to be maintained to correct and change artillery. See 10.6.4.

10.6.2. Indirect Area fire is only permitted done by a battery. Only batteries setup at the start of a game and that do not move in any turn may perform Indirect Area fire.

10.6.3. There are several methods to instigate Indirect Area fire. It can be pre-planned before the scenario. It can be a response to enemy artillery fire (Counter Battery) or it can be requested by some element. The request for artillery fire must have some kind of location attached to it. This can be in text or a little map scratched just to indicate in advance where this fire is intended to go. Alternatively during Communication phase a marker of some kind may be placed at the point of aim.

10.6.4. Indirect Area fire will take place several turns after the turn that it is requested. A table lists the various reasons for time lag.

10.6.5. The second party directing the indirect artillery is called the observer. The observer must be connected via some kind of communication link to the battery commander. A communication link must be established before controlling the battery. This is only done in the Communication Phase.

10.6.5.1. The link must be maintained to correct or change the position of the point of aim. In fact the correction must be stated, written down, or at least agreed to during the Communication Phase of a turn. The controlling element must state the direction (per 1 of 8 compass directions) that the center of area will move. This thus becomes a bit of a guessing game when firing at moving formations as the player firing artillery firing does not know where his target may move to.

10.6.5.2. A telephone line is usually used to link batteries to their own command element. Defensive forward observers may also be linked by telephone lines. Units on the march will often not be linked via telephone line, but must use radio to communicate to batteries.

10.6.6. Duration of Artillery - A time length or duration in game turns of requested fire must be given at the time of connection link. This duration in the Basic Game can be no longer than 6 turns. After 6 turns the battery cannot fire again for additional 6 turns. To request artillery after this period communication must again be reestablished and the process of requesting artillery must be started over. In the basic game radio communication must be maintained each turn the battery fires. If it is lost the battery loses contact and no more firing from that battery may occur for 6 turns. If using the Advanced Artillery Rules the number of turns is dependent on the target type. However, radio contact only needs to be maintained when the caller is changing the position of the PoA or to change from spotting fire to FFE or to call a stop to the artillery fire. Otherwise, the battery will continue to fire at the last position for the allocated turns.

10.6.6.2. Turns of fire must always be consecutive once FFE starts.

10.6.7. Indirect Area fire will scatter in much the same way as Direct Area fire, but to a greater degree.

10.6.7.1. Roll one D10 per battery for point of aim scatter. For number 1 - 8 consult the Compass directions as per Section 1.3. If this is a '9' or '10' roll again to determine a compass eight point direction.

10.6.7.2. If on the second attempt to obtain scatter numbers a ‘9’ or ‘10’ is rolled there is no scatter whatsoever. The artillery is centered exactly on the point of aim.

10.6.7.3. Once a direction of scatter is found roll a D10

again for scatter distance. Multiply the D10 roll by 30 (30 x D10) to find the scatter distance. Move the CoA this distance and direction from the point of aim. Thus Indirect Artillery will scatter at about three times the rate as Direct Artillery.

10.6.8. The center of the beaten zone can be corrected up to 150 GSU per turn if the observing element can see the point of aim during battery fire and has a communication link to the battery command element(BCP).

10.6.8.1. The controlling FO or command element must communicate the compass direction of the CoA move during the Communication phase. During the Combat phase the center of the area can be repositioned up to 45˚ from this direction at the player's discretion. (What this means is the player controlling the artillery battery only has to try to estimate the angle that the artillery will move within 3 ordinal directions and does not have to guess the distance. This saves him from having to become a forward artillery observer himself and lets him play the game.)

10.6.8.2. The center of the beaten zone that is requested to correct must change it this direction at least 25 GSU and up to a maximum of 150 GSU.

10.6.8.3. Putting down pins and markers of intended artillery correction before movement is not a good idea as it may influence the movement of the targets units.

10.6.8.4. As stated in the Communication rules a FO or Command element controlling the artillery battery must maintain communication link with them each turn it wants to redirect the battery.

10.6.9. Rocket batteries are notoriously inaccurate. The rocket battery does not correct as readily as normal artillery. Instead starting with the resulting scattered point the observer may adjust this point (it becoming the point of aim) up to 150 in any direction. However the next salvo and any following one directed at this point will scatter as normal indirect artillery scatter except this scatter distance will be 20 x D10 in distance. Rocket artillery accuracy does not improve over this.

10.6.10. Once a particular battery has finished its fire it cannot be recalled for 6 turns. (5 if defending if US, British post 1944.)

10.7. Targeting with Area Fire -Instead of commanding the battery to fire at the selected point of aim and maybe wasting a turn or more of the requested fire or possibly scattering the fire on to friendly troops it may be better to request the firing of spotting round(s). This may either be HE or smoke. If it is HE it will not be spotted over any trees, bushes and if there is other fire going on in the proximity it will not be identified. If it is a smoke shell the enemy may get the idea that an artillery barrage may follow. In either case once this lands and is spotted by the artillery observer the center of aim may be corrected from this as per the following:

10.7.1. If 150 GSUs is not enough to reach the original point of aim further smoke markers may be requested in following turns (1 per turn) to correct at a maximum of 150 GSUs per turn. The player controlling the artillery will mark the new CoA with a smoke marker (cotton ball) or a pin to indicate the adjusted / moved CoA.

10.7.2. Multiple spotting rounds - ranging bracket. German, U.K. or Americans batteries with 2 or more weapons may fire 2 spotting rounds at once. They land 200 GSU apart but only along the line of fire. Instead of positioning a single spotting round exactly at the marker after scatter separate two spotting rounds by 200 (100 GSU long and 100 short of the point of aim). The artillery player has the choice in the next turn to adjust fire from either of these positions.

10.7.3. Once the artillery center reaches the original point of aim (or close enough to it) the firing player may call for Fire For Effect (FFE) at which time the HE artillery can attack elements in the beaten zone.

10.7.4. Once a FFE is called the artillery can still be corrected or moved up to 150 per turn. Smoke rounds or HE marker rounds can no longer be used to spot for the battery as there would be much to much dust and smoke to distinguish a single smoke round. Also, note to change from spotting to FFE a radio contact roll must be made.

10.7.5. No Cheaters Rule 1 - It is sometimes gamesmanship to fire at an insignificant target in the hopes that the artillery will scatter onto unseen but much more valuable elements that could not be selected as targets. If that happens the defending player has the option of invoking '***No Cheaters Rule*** 1'. Which is: the attacking player's artillery does not scatter at all but drops exactly where he intended it, on the insignificant target.

10.8. Target Reference Points (TRP) - This can be any landmark or terrain feature such a hill top or cross roads. These are pre-registered targeting points. The artillery battery has in the previous days fired on these points and done the aim point corrections. TRP locations are written down before the start of a game. They cannot be changed once play begins.

10.8.1. In an attacker vs defender scenario the defender is allowed 5 TRP and the attacker 3 TRPs.

10.8.2. In a meeting engagement both receive 3 TRPs.

10.8.3. In a campaign game the attacker receives no TRPs beyond 80% of the range of its artillery on the day of the battle.

10.8.4. Requesting fire at a TRP will be one turn faster than firing at unregistered targets.

10.8.5. When requesting indirect fire on a TRP point artillery will only scatter as per direct fire.

10.9. Artillery Allocation [Advanced Rule]. Artillery is not an unlimited quantity. Only so may turns of fire is permitted to neutralize or destroy an enemy force. In the basic game a maximum of 6 turns of fire is permitted per

request. In our advanced game the type of target must be specified. This is cross-referenced with the number of turns of fire to be allocated to neutralize the target. Along with this data is a priority rating number. This is the tactical importance of destroying or neutralizing this particular target. Depending on supply of artillery ammunition a certain minimum priority rating must be reached before artillery will even be allowed to fire. In reality there were times where supplies were so low that only one or two turns of fire were permitted per day no matter what the need.

10.9.1. The element requesting artillery support must identify the target(s) sufficiently enough to determine the size and type of target it is. They must make the communication roll to see if they can link to the battery command element. If that succeeds the battery command element will allocate a number of turns of fire based on the information the requesting element passes to him. The number of turns of FFE will be determined per the **Indirect Artillery Target Priority Allocation** list table. If there are no turns of fire allocated for a particular target on the table then the request for artillery support is denied.

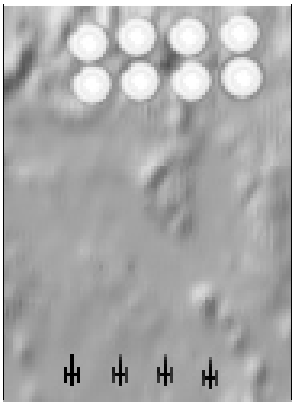
10.9.2. If more than one successful request for fire link is made from the same battery the battery allocation of artillery support usually goes to the target that is highest on the list. British FOs can 'order' their battery to fire rather than request it (provided the number of allocation turns is one or more). In that case a British FO's request will supercede a command elements request for that particular battery regardless of the targets priority on the list. British FOs cannot however, order batteries other than their own.

10.9.3. Only one artillery FO is permitted per battery unless a larger number is stated in the game scenario or agreed upon before play begins.

10.9.4. There are any number of command elements that can make a request for artillery support. But no lower than a company command element may request for British and German. No lower than a platoon command element for American. And no lower than a battalion command element for all others including Russian and Italian.

10.9.5. Once the turns of artillery fire are completed for a particular target the battery must rest ro move and not fire 6 full turns before it can fire another allocation.

11. Smoke Screens - Smoke screens are used to conceal movement of friendly troops and to obfuscate enemy positions. Smoke screens are defined to have two intensities; sketchy and thick. There are two main types of smoke shells; chemical base-eject (CBE) and phosphorus (usually noted as WP for white phosphorus). Most smoke has a defined minimum size of 25 GSU across and 25mm high.



Two smoke puffs are placed per firing gun tube.

11.1. Sketchy smoke is a hasty or less well made smoke screen. There could be areas in this screen which could be regarded as completely opaque but there are gaps between these. This type smoke is usually created by direct fire of smoke shells from un-aligned guns or howitzers. Sketchy smoke screens may also be generated by a vehicle firing smoke canisters, pots or candles or infantry tossing smoke grenades. Each weapon firing smoke shells will create one smoke marker (25 GSU cotton puff) per segment they are permitted to fire. (Tank guns or other weapons do not fire smoke at their full ROF.)

11.1.1. Sketchy smoke screen inhibit sighting to a degree and add a +2 to-hit modifier when firing through any part of a sketchy smoke puff.

11.1.2. Vehicles moving through sketchy smoke may not move more than ¾ speed. Also, vehicles may not move at road speed, but at cross-country speed, when moving through sketchy smoke.

11.1.3. Engineer and some elite squads have enough smoke grenades to make one puff of sketchy smoke per game.

11.1.4. The effects of sketchy smoke puffs as well as thick smoke puffs are additive. If there is a +2 to-hit modifier when firing through one 25 GSU smoke puff then there is a +4 modifier when firing through two such puffs.

11.2. Thick smoke screens are created by artillery batteries firing smoke shells for multiple turns into a given area.

11.2.1. The first turn of smoke artillery fire will considered to be sketchy smoke. More than one turn of artillery fire into the same area will result in the smoke being thick smoke.

11.2.2. Vehicles move at a maximum through thick smoke at ½ normal cross-country speed even if on roads.

Vehicles that can must button up when in or moving through thick smoke.

11.2.3. When firing through a thick smoke puff there is a +4 to-hit adjustment.

11.2.4. The maximum sighting distance in thick smoke is limited to 75 GSU. Ordinarily the –25 sighting factor will limit this to a lesser number.

11.2.5. Two smoke puffs (25 GSU) per barrel in the artillery battery are placed side by side on the game table. The center of which is the point of aim. If using indirect artillery fire the center may have to be adjusted as per normal battery fire. Below is an illustration of a 6-gun battery firing in the direction that would be the top of the page.

11.2.6. Vehicles or infantry moving through smoke must reduce their speed. Infantry move at a maximum of 40 GSU per turn. Vehicles must use cross-country speeds when on roads. Infantry are not considered to be 'moving in the open' when moving in smoke, thus smoke provides a bit of concealment.

11.3. Direct Fire of Base Eject Smoke - When using direct fire to deploy CBE smoke shells the minimum (point of aim) range is 200 GSU. The maximum is either maximum sighting distance or 1600 GSU which ever is less.

11.3.1. Direct fired shells from guns will scatter beyond the point of aim. This is because the rounds will ricochet off the ground and will produce smoke at the point they come to a stop. To determine this point indicate the point of ground (point of aim) that the gun is firing at. (This must be at a range of 200 or more.) Roll one D10 and multiply by 20 GSU (a '0' will be 10 in this case). Place the smoke puff this distance down range from the point of aim. The exception to this is that the shells will not ricochet over hills. If the point of aim is backed by a hill of at least 25mm in height or more the smoke will not scatter beyond this level.

11.3.2. Slow acting CBE smoke will take effect in two consecutive fire segments or at the end of the turn that it was fired in, which ever comes first. Up until that point it has no effective obscuring ability.

11.3.3. Slow acting CBE smoke lasts 4 complete turns not including the one in which it was fired. It is removed at the end of the turn 5 turns after it was fired.

11.3.4. Fast acting CBE takes effect in the following fire segment after which it was fired or the end of the turn it was fired, whichever happens first. If has no effect in the Fire Segment it was fired.

11.3.5. Fast acting CBE smoke last two complete turns not including the one in which it was fired.

11.3.6. When firing at targets sighted 'first sight' this turn or the firer has moved more than a shift move the point of aim will also shift from side to side. Roll a single D6 for shift. A 3,5 the shift will be to the left. A 4,6 the shift will be to the right. A 1 or 2 there will be no shift. A 5 or 6 the distance will be 50GSU up to 400; 75 up to 800 and 100 over 800. On a 3 or 4 the distance will be half of this.

11.4. Direct Fire of White Phosphorus - When using direct fire to deploy WP smoke shells the minimum (point of aim) range is 50 GSU. The maximum range is the range of HE shells.

11.4.1. Direct fired WP shells will scatter its smoke effect from the point of aim. But unlike CBE smoke WP releases its smoke in an explosion on impact. (There still is some scatter.) Mark or somehow indicate the point of ground (point of aim) that the WP is being fired at. Roll one D10 per barrel firing. Multiply the result by 10 GSU. Move the puff this distance down range from the point of aim. This is the point the smoke puff is placed.

11.4.2. WP smoke takes effect in the phase following its use. It produces only sketchy smoke but it has an almost immediate obscuring effect. Besides the turn that WP is fired in it lasts for two more complete turns.

11.4.3. WP can fire fired 'at' a tank sized target. Consider it ballistically comparable to an HE or HEAT shell. That is, if there is an HE to-hit chart for the firing weapon use it. If not use the HE/HEAT adjustments to find what is needed to hit with the shell. There are no multiple hits when hitting with WP. If the shell misses use the scatter effect per 10.5.5.1 to determine where the smoke puff is to be placed. (The target would the point of aim.) If the WP shell hits the AFV treat this as a HE killpower attack on any tank riders of the vehicle. Also, this eliminates the tank commander if the vehicle is open topped or unbuttoned. If buttoned or not the vehicle is blinded and can no longer sight nor fire until the WP smoke dissipates. Place a smoke puff directly on the vehicle if it is hit.

11.4.4. When firing at targets sighted 'first sight' this turn or the firer has moved more than a shift move the point of aim will also shift from side to side. Roll a single D6 for shift. A 3,5 the shift will be to the left. A 4,6 the shift will be to the right. A 1 or 2 there will be no shift. A 5 or 6 the distance will be 50GSU up to 400; 75 up to 800 and 100 over 800. On a 3 or 4 the distance will be half of this.

11.5. Unless smoke is fired from artillery it never becomes thick smoke. Thus tank and assault gun smoke, chemical or WP, will only ever form sketchy smoke screens.

11.6. Smoke will tend to drift per the wind direction. As it drifts additional smoke puffs are placed downwind from the last smoke puff. Roll a D10 for wind direction. Additional smoke puffs are only placed during the

Miscellaneous Details Phase of a turn.

11.6.1. A '1'-'8' means the wind will drift smoke in that compass direction. For CBE smoke place an additional smoke puff next to the last one placed each turn after the first turn. For WP smoke place an additional smoke puff next to the last one every other turn after the first turn. There is no smoke drift done for the first turn. Smoke will drift until it is removed per 11.8 rule

11.6.2. A '9' means the wind is too strong to form a thick smoke screen (even with artillery). Roll until a number between 1-8 is made as that will be the strong wind direction. Place two smoke puffs down wind each turn after the first. But smoke in a strong wind will last one turn less than normal.

11.6.3. A '0' (10) means that there is no wind at all. There is no drift of wind at all. Base-eject smoke will last an additional turn if this weather condition is present.

11.7. While smoke lasts a number of turns it is not all removed at once. Remove smoke at the end of its duration in the **Miscellaneous Details Phase** of a turn. If smoke was drifting remove two smoke puffs a turn starting at its original location. This is after all the sighting for that turn has taken place. So new sightings will have to made the following turn for newly appearing targets. Also continue to drift the smoke 1 puff down wind until the last puff is one of the ones removed. For a strong wind remove 3 puffs per turn. The illustration below shows how to lay smoke puffs from a single CBE smoke shell deployment.

11.8. Smoke from tank turret dischargers as the Germans had can be used to form sketchy smoke. These are fired in the Fire Segment that the vehicle is permitted to fire its main weapon not withstanding its ROF. These produce a puff 25 GSU across which produces fast acting sketchy smoke. Thus they last two additional turns after the turn in which they were fired.

11.8.1. Up to two smoke puffs can be made per vehicle per game. They can both be fired at once and in the same direction, one behind the other to produce a double thick screen.

11.9.2. This smoke screen lasts two turns following the one in which is was fired.

11.9.3. Fixed mounted turret dischargers can produce smoke only in the front 45˚ arc of the turret. To fire in any other direction the turret must be traversed.

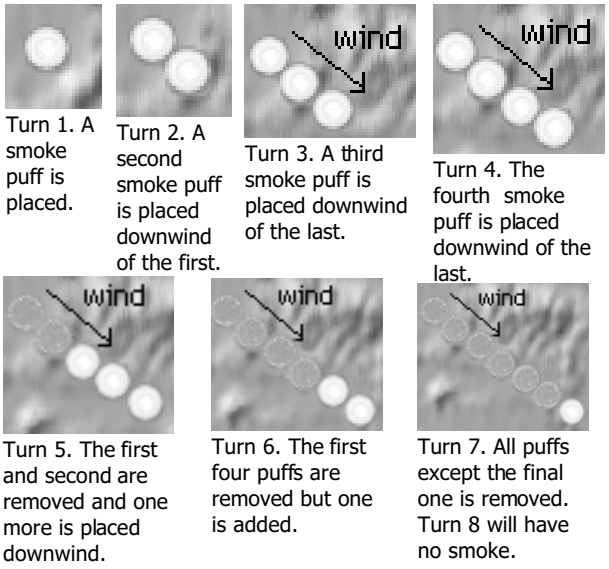
11.9.4. German turret mounted Nb.K.39 smoke generators can fire in a full 360˚ arc of the vehicle.

11.9.5. The maximum range of turret smoke dischargers is 30 GSU.

11.9.6. When firing tank turret dischargers a vehicle will have a +2 added to its to-hit number for any firing it does in that Fire Segment.

11.10. Some AFVs were equipped with smoke discharger candles or pots. These were fastened onto the rear or sides of the AFV and produced a cloud of smoke in the vehicles wake. While not as effective as a smoke projectile this did produce a lengthy screen.

11.10.1. Place smoke puffs along the entire length of a vehicle's movement. This smoke lasts for one turn following the turn in which it was produced. Thus it will form a screen the maximum length of up to two full movements of a vehicle. Also, movement over 300 GSU in a turn reduces the effectiveness of the smoke to nil similar to a condition of high winds.



Turn 1. A smoke puff is placed.

Turn 2. A second smoke puff is placed downwind of the first.

Turn 3. A third smoke puff is placed downwind of the last.

Turn 4. The fourth smoke puff is placed downwind of the last.

Turn 5. The first and second are removed and one more is placed downwind.

Turn 6. The first four puffs are removed but one is added.

Turn 7. All puffs except the final one is removed. Turn 8 will have no smoke.

11.10.2. This smoke has half the effectiveness of sketchy smoke in both sighting and to-hit adjustments. However like all smoke its effects are additive.

11.10.3. This smoke is effective in the turn that it was produced. Place the smoke during the movement phase of the turn and not the combat phase.

11.10.4. Smoke candles burn for 6 turns. Tank crews usually ignite these themselves thus the tank crew is exposed to fire the first turn of smoke making. The vehicle is considered unbuttoned and can not move greater than ¼ movement the first turn and cannot have moved the previous turn.

11.10.5. AFVs that are stationary the entire turn will produce a single puff of sketchy smoke at their location. Furthermore if they remain stationary the following turn they can produce sketchy smoke that will drift (as per 11.7).

11.10.6. Smoke candles cannot be restarted once used to make smoke. Also, smoke candles cannot be stopped unless the vehicle is driven into water deep enough to submerge its hull.

11.10.7. There is no smoke drift associated with candle smoke unless the vehicle is stationary.

11.11. Artillery fire of two or more turns cause obscuring dust (Unless in snow or rain or on wet and muddy ground). Cotton balls dyed tan can represent dust clouds. Each 50 GSU of dust is the equivalent of 25GSU of sketchy smoke for sighting purposes. A dust marker of 25 GSU is a +1 added to-hit adjustment. Dust also drifts (to a maximum of 4 puffs) and is removed at the same rate and manner as smoke once the artillery stops.

11.12. Burning/exploding tanks cause thick black smoke. But this covers an area only as large as the turret of the vehicle. It does not drift as it is hot and rises instead of hugging the ground. Smoke is considered 100 in height so it may obscure sight from hills overlooking the burning vehicle. The smoke lasts the entire length of the scenario.
Note – the only way a burning vehicle will stop producing smoke from burning in a scenario is to submerge it in water. If a DD tank or boat or landing craft sinks this will stop the burning vehicle smoke.

12. Infantry

- The basic infantry element in Panzer War is the squad (section for British). This is a unit of from 7 to 12 men. The rules for combat and movement for infantry is somewhat different from other elements in Panzer War. The location of the squad is defined by a stand ½" by ½" area. Which is modeled in the game by chit or counter of that size. It must be remembered that this is the general area of a group of men. They can be anywhere within that area, and not necessarily at its center or any other single point. While the squad is the standard element there are also 2-3 man weapons teams, scout or sniper teams and gun crews.

12.0.1. Weapons teams of 2-3 men are formed around a single special weapon like machinegun anti-tank rifle or rocket propelled anti-tank rocket launcher.

12.0.2. Two-three man scout, sniper or forward observer teams may move separately from any platoon or larger unit. Their loss does not affect the morale of their parent unit.

12.0.3. Each platoon (of 3 or more squads) on the attack may generate one scout team at the beginning of the scenario. Each platoon (of 3 or more squads) on the defense may generate one sniper team at the beginning of the scenario. These may separate up to 250 from their parent unit. (If the platoons of a company are too small to generate a scout/sniper team then one team may be generated from each 3 squads of a company rounded down.)

12.0.4. Crews are troops manning anti-tank guns or towed guns. The crew counter will represent about the same number of men as a squad counter. Some very large weapons have enough crew to qualify as having two crew counters. Crews do not have any ranged weapons but do have a contact combat factor of 0.

12.1. Infantry have two standard movement rates.

12.1.1. Infantry have a movement rate of 50 GSU per turn if they are moving in terrain that is open and flat.

12.1.2. Infantry that is moving in woods, fields or otherwise rough terrain have a movement rate of 40 GSU per turn.

12.1.3. Infantry may make a double-time or charge non-standard movement rate of 80 per turn. An infantry unit may not make more than two charge moves in a row. An infantry must halt for one turn after it makes two charge moves.
(This roughly equates to 3 mph for good going and 2½ mph for rough going.)

12.2. Infantry squads not within 200 GSU of enemy elements may move all their movement in segment 6, the last movement segment. If closer than 200 they may split their move and move in segments 1 and 6. When doing

that they must break their total movement allowance into two equal moves.

12.2.1. Movement through woods or over rough terrain is not pro-rated. In any segment an infantry moves in this terrain it must move at the slower (40 per turn) movement rate.

12.2.2. Infantry elements may move through or stack with friendly elements.

12.2.3. Infantry units may not move through, over or into contact with an enemy squad without making a contact check. If they succeed the check they must stop when they touch (contact) an enemy squad. To pass the check roll one D10 per moving element. If the roll is equal to or less than the 30* listed fire-factor number the test is successful. If the check fails the element must halt no closer than 10 GSU from the enemy squad.

12.3. Infantry units may be transported by vehicles as passengers. When riding as passengers infantry do not use their own movement but that of the transporting vehicle.

12.3.1. It takes ½ turn to load or unload from a transporting vehicle. Transporting vehicles must remain stationary the entire turn in order for the troops to load.

12.3.2. Transporting vehicles may only move up to half move when unloading passengers. A passenger unloaded from a half of shift moving vehicle may not move in the turn. An infantry unit unloaded from a completely stationary vehicle may move up to half its move in the turn.

12.3.3. Transporting vehicles generally carry up to one full squad.

12.4. INFANTRY COMBAT - Infantry squads are rated to their effectiveness in combat. See Infantry Tables. Each infantry squad has its own intrinsic firepower factor. This firepower is applied to destroy other infantry or soft targets. Each military has a chart relating it infantry firepower for various types and at various ranges.

Note - the higher the firepower the more effective the element.

12.4.1. As with all killpower attacks on infantry the adjusted firepower or under must be rolled on a D10 to kill the element.

12.4.2. The effective killpower at the range of the target is the base factor. This is adjusted by several factors. See Kill Power Adjustment factors.

12.4.3. A killed squad is eliminate from play.

12.4.4. A broken squad is no longer effective but is not removed from play. Mark it as broken in some way.

12.5. Infantry firepower has an effective range of 200 GSU. It is most effective under 30. Firepower factors listed as Contact are a combination of aggressiveness, hand-to-hand ability, grenades and firepower.

12.6. Infantry squads are always allowed to fire their small arms if the target is in sight at the end of movement.

12.6.1. If they fire at targets that were not sighted last turn their firepower is reduced by one factor.

12.6.2. If they fire on the move their firepower is reduced by one factor.

12.6.3. If the infantry unit is destroyed while on the move their intrinsic LMG or anti-tank weapon does not get to fire. The unit must survive until Combat Segment 4 in order for moving LMG, MMG and HMGs to fire.

12.7. Infantry units containing light weapons like machineguns, anti-tank rocket launchers, anti-tank rifles, or sapper and demolition equipment may only use that equipment/weapon in following combat segments.

12.7.1. If the infantry element does not move in the turn they may fire these weapons in combat segment 1.

12.7.2. If the infantry is stationary but its target appears as a first sight target it fires in combat segment 3.

12.7.3. If the infantry element moves it may only fire these weapons in combat segment 4.

12.7.4. If the infantry makes a close assault it may only attack in combat segment 5.

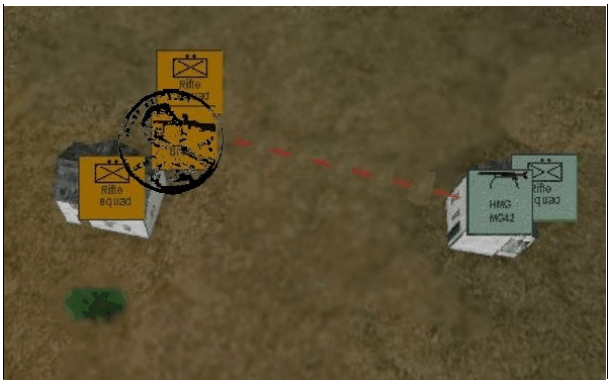
12.8. Fire from rifle squads only affects one squad element per turn. Fire from full automatic weapons (LMG, MMG, HMG) can affect more than one squad sized element per turn.

12.8.1. For LMG, MMG, HMG mark (cover) a group of more than infantry squad element with a US penny(19mm diameter).

12.8.2. When firing LMG up to two squad elements under or touching the penny roll a D10. For the first element the normal killpower is applied. For the second element subtract one from the normal killpower factor total.

12.8.3. When firing MMG and HMG up to three squad elements under or touching the penny roll a D10. For the first element the normal killpower is applied. For the second element subtract one from the normal killpower factor total. For the third element subtract two from the normal killpower factor total.

12.8.4. Up to four team elements count as a single squad in the above calculations. Teams are combined to count as a single target squad must be diced separately to be killed.



The penny covers 3 elements. The MG42 firepower is a base 2 at the range. The British squad at the top moved in the open but this is the first time the MG saw it so the result killpower is 2(base) +1(moving in open) -1(first sight) = 2. The Bren team also moved in the open and was sighted for the first time. It is the second target of the MG area so the killpower on it is reduced 1 equaling 1. The squad in the house is also in the area fire but it is the third target. It did not move in the open so the result killpower on it would be 2(base) -2 (3rd target) -1 (house protection) -1 (first time in sight) equaling -2 killpower.

12.8.5. The penny cannot cover another friendly element nor be within one penny's width of the firing element.
12.8.6. Teams are combined to count as a single target squad must be diced separately to be killed.
12.8.7. Rifle, SAR, SMG and AR type squads may use the penny method to cover more than one team element. Here each team is diced separately to be killed. For rifle attacks each successive team reduces the killpower attack. For SAR, SMG, AR there is no reduction in killpower for successive team targets.
12.8.8. Targets that are not within sight nor direct-line-of-fire of the firer cannot be covered with the penny area.
12.8.9. Infantry elements attacked with HE or machine guns can be suppressed. If the To-Kill die roll is +4 above the net to kill number the element is suppressed.

12.9. Infantry Squad Morale - Infantry squads have three morale states in Panzer War. Normal, suppressed and broken. In the normal state the infantry may perform tasks their commanding player decides for them. In the **suppressed** state the infantry cannot move and their effective firepower is reduced by one. Suppressed infantry sights at half the normal distance. In the **broken** state the infantry may not fire and must rout away if within 200 of firing enemy units.

12.9.1. Each infantry squad is rated to its breaking point. This is the first number (+nn/xx/xx) listed under Morale on the elements Infantry table listing and always has a '+' before it. When an attack is made on the squad and the D10 number is up to this number higher than the actual adjusted killpower then the squad is broken.
Example: The Adjusted Killpower against a particular squad is '3' at 100. The target squad has a break factor of '+2'. If a 3 or lower is rolled on the D10 the squad suffers a 'kill' result. If a '4' or '5' is rolled the infantry squad suffers a 'break' result.

Example: The Adjusted killpower against a particular squad is '-2' at 200. The target squad has a break factor of '+2'. If a -2 or lower is rolled on the D10 the squad suffers a 'kill' result. If a '-1' or '0' is rolled then the target squad suffers a 'break' result.

12.9.2. Once a squad is broken it must retreat away from any firing enemy units within 200.
12.9.2.1. Broken squads that cannot rout without coming within a penny's width (19mm) of an enemy and are currently within a penny's width of enemy units must surrender.
12.9.2.2. Broken squads within 100 with hard cover that has not been penetrated by enemy fire may freeze in place.

12.9.3. If a infantry team or squad is hit by fire which is +4 or less above the net Killpower they are suppressed. Suppression lasts until the end of the turn following the one they were suppressed in.
12.9.3.1. Elements must be suppressed each turn to remain suppressed. They automatically recover from suppression the turn after the one they are suppressed in
12.9.3.2. Suppression Exception: Infantry elements under charge orders and which move at charge speed in the turn may choose to disregard suppression and continue to charge. But they must pay a price. There is an additional +2 to kill factor added on to any killpower on all attacks on them in the turn.
12.9.3.3. Suppressed elements do not move (are 'pinned') and have a reduced firing and sighting ability.

12.9.4. Broken infantry may try to rally in General Morale Phase (E.). Roll 1 D10 per routing squad. Compare this roll to the second number (+xx/nn/xx) listed on the Morale column of the Infantry table. If this **number or higher** is rolled the unit rallies and is normal again.
12.9.4.1. Broken teams, squads and crews are allowed up to 5 turns to rally. After 5 turns of being broken they removed from play.
12.9.4.2. If while attempting to rally a number **equal to or lower** than the dispersal number (third one of the morale equations +xx/xx/**nn**) the element is immediately removed from play. These elements do not have 5 turns to rally.

12.10. Organization - Orders are given to infantry units at the platoon level if AOW and to the company for SOW.

Individual squads and teams move as part of the platoon. Thus these behave in the command structure much the same way individual vehicles behave.

12.11. CAT Attacks (CLOSE ASSAULT TACTICS) When infantry need to attack armored vehicles or fortifications they can employ close assault tactics. Here one or more troops of a squad attempt to get close to the target and lob or place explosives on the target, fire rifle grenades or otherwise attempt to damage or destroy the target with some kind of device. The CAT attack is an abstract attack as the owning player only controls the squad of the attacker. The individual soldiers are considered to be somewhere within **25** GSU of that squad.

12.11.1. Only non-routing and non-suppressed squads may conduct **CAT** attacks.

12.11.2. Only squads within 25 GSU of the target may conduct CAT attacks.

12.11.3. CAT attacks are always conducted in Combat segment 5. Should the squad be destroyed, routed, or suppressed before this segment the squad may not conduct a CAT attack.

12.11.3.1. Squads may move or even charge move during the turn it conducts a CAT attacks.

12.11.3.2. Squads may fire weapons, even anti-tank rockets in the segments that they conduct CAT attacks.

12.11.4. The chance for a successful CAT attack will be the sum of various factors. The starting base number is 1. Add or subtract all applicable factors to 1. A single D10 is rolled and if it is equal to or less than the sum then the attack is a success.

12.11.4.1. Only one attack attempt is permitted per squad per turn.

12.11.4.2. Declare all CAT attacks of all squads before actually rolling for the attacks.

12.11.4.3. See the Close Assault Tactics (CAT) Factors table for various factors.

12.11.5. Special CAT Weapons - Only special squads are allowed to use some weapons. These must be acknowledged by both sides at the onset of the scenario.

12.11.5.1. Demo Charges. These are only allowed to engineer or sapper squads. Only one Demo charge attack is permitted per scenario per squad.

12.11.5.2. Flamethrower. These are allowed to specially designated engineer squads only. Only one engineer squad per platoon. These may flame attack up to three times per squad per scenario.

12.11.5.3. Molotov Cocktails. These are special ad hoc weapons. Regular troops most likely would not use these unless they are in a built up area and without their normal anti-tank weapons. These can only be used by troops already stationed in the built up area and on the defense.

12.11.6. If the CAT attack is successful roll one D10 on the CAT Results table to determine the damage inflicted. Note the damage may be multiple part.

12.11.6.1. If the squad has some special weapons adjust the damage per the adjustment in the notes part of the table.

12.11.6.2. If the CAT attack is not a success no damage in inflicted and the attacking squad suffers no damage for its failed attack.

12.12. Flamethrowers. Designated engineer infantry teams may possess flamethrowers. The specifics for these weapons can be found in the Generic Infantry Weapons table of the Infantry Tables. Basically, they have a killpower of 6 up to 30 away. At point blank range where the bases are touching the killpower is 7. They can be used to attack AFVs as part of a CAT attack. They may only be used in an attack 3 times in a game.

12.12.1. Some vehicles may be armed with flamethrowers. These are more powerful than infantry flamethrowers and their range is up to 50.

12.12.2. The killpower of vehicle flamethrowers is 7 at point blank and 6 up to 50. In addition these can attack all infantry elements covered by a circle 19mm in diameter (a US penny) as per **12.8.1** that is as if it were a heavy machinegun.

12.12.3. A flamethrower armed vehicle needs to roll a to-hit number to attack another vehicle. The basic to-hit number is 2 to range of 50. All normal modifiers apply. If a hit is scored the damage is as per a successful CAT attack on an armored vehicle. See Close Assault Tactics Results table in the Infantry Tables.

12.12.4. An ordinary flamethrower vehicle may make up to 6 flame attacks per game.

12.12.5. If the vehicle tows a special trailer with a tank of additional fuel it may make up to 10 attacks per game. These vehicles have 3 armor on all sides and if penetrated will explode giving a flame attack on their towing vehicle.

13. General Morale- Troops rarely fight to the last man. Instead after taking casualties the remaining troops will lose their motivation and seek their own survival. **General morale** is different from squad or vehicle crew morale. General morale covers the morale of units rather than individual elements.

13.1. When basic units suffer losses through casualties that pass through the following percentile levels of : 15%, 30%, 60% or 80%, they must test on the **GENERAL MORALE TABLE.** The test is made when losses get to or surpass the percentages listed. That is, a unit that has suffered 14% losses does not test at 15%. A unit with 25% does test at 15%. A unit must only test for any given loss percentage once per scenario. If more than one level is surpassed in a turn a test must be made on each level.

13.1.1. Units that are not within 800 of the enemy and not under attack do not have to test for General Morale.
13.1.2. Calculations are based on percentages remaining of the original number of squad elements for infantry and vehicle elements for armor. Infantry team and support elements are not counted in this calculation. . The loss percentage depends ratio of loss elements to the number the unit started with at the beginning of the scenario or the size after a **Regroup** resizing. Other resizing for vehicles returning to be re-supplied or repaired under their own power also establish a new base number to compare losses to.
13.1.3. The exception to 13.1.2 is that if the original unit is made up entirely of team and/or support weapon, then use these elements in the calculation of lost elements.
13.1.4. Squads that have broken are considered casualties for morale purposes. However, if a unit tests morale at a given percentage level (15%, 30% etc.) and later the squads rally and rejoin their unit, when that unit again takes losses and again reaches a tested level of loss, it does not take the test again (for that level).
13.1.5. Vehicles left behind due to battle damage do not count towards losses until the parent unit is out of sight and out of communication and the disabled vehicle is under attack. At that time the disabled vehicles must test. The parent unit does not have to test until it suffers actual combat losses. At which time vehicle losses due do being left behind and battle damage all count together. A vehicle with a jammed gun can retire to the rear (as if going to get more ammo) and once is more than 800 from his unit and out of sight of enemy elements is no longer considered a part of any unit for general morale purposes. The organizational unit does not consider that vehicle a loss and must resize itself down to a number that does not include that missing vehicle.
13.1.6. If a unit has been made of remnants from different units regrouped together, the number of losses is based on the number of elements that were originally in the reformed unit.
13.1.7. If a unit fails it morale test a second die roll must be made to determine the effect of that morale failure is. Roll percentage dice on the Morale Failure Results Table.

13.2. When a basic unit breaks morale and starts to retreat or is completely destroyed, it may affect the next higher level unit in the organization. If a basic unit of an organization fails morale and starts to retreat and more than 50% of like units are engaged in battle then the next higher organizational unit must tests its own morale. The calculations for higher level units is not in percentage losses of elements, rather it is in organizational units.
Examples: A loss of one platoon from a 3 platoon company will dictate the company takes a morale test as having lost 33% of its units. A loss of a company from a four company battalion will dictate a morale test of 25% for the battalion.
13.2.1. SoW organized armies do not test at the platoon loss level. Basically the organization level that must test first is the one tactical orders are issued to. SoW tactical orders are usually issued at the company level. AoW tactical orders are issued at the platoon level. That is the level at which tests for general morale must start.
13.2.2. Organizational units not directly on the game map do not have to test for general morale. Nor do units which consider units on the game table to be less than 50% of their organizational strength.
13.2.3. Other than physical destruction of the unit, only losses that result in a retreat being called are counted as a loss for next echelon level units. Results of Regroup, or Halt are not considered morale failure.
13.3. When a basic unit takes 30% losses or more in its first game turn under fire, not only must it test at the 15% and the 30% level, but if it fails either morale check, the die roll on the Morale Failure Results Table is reduced by 20 factors.

13.4. No infantry elements (squads, teams) within a unit (platoon, company) that has failed morale and ordered to retreat may be rallied.

13.5. Vehicles from a unit that has been forced to withdraw or retreat may fire smoke to cover their retreat and may fire at the enemy. Units forced to retreat due to morale failure must move more than half movement away from the enemy. Units retreating by their own withdraw orders may move less than half move away from the enemy.
13.5.1. Infantry elements retreating may fire their small arms but not their support weapons.
13.5.2. Gun crews that must retreat may destroy their

weapon before retreating if there are no enemy units within 100 of their gun.

14.0. Ramming.

Running one AFV into another. Ramming is different than pushing aside. A tank may push aside a smaller tank but moves at shift move speed. Pushing doesn't hurt the pushing tank.

Berserk crews must ram. i.e. 6 backed by 6 in crew morale test. SS AFV crews in 1945 may ram.

14.1. Vehicles may ram if they can reach an enemy vehicle before being destroyed by fire or the ramming vehicle explodes.

14.1.1. Vehicles that moved ½ or less ram in fire segment 3.

14.1.2. Vehicles that move over ½ ram in fire segment 4.

14.2. If the target of the ram moves in the turn they have a chance of avoiding the ram. This is done during movement of the ramming vehicle. The effect though does not take effect until the appropriate firing phase thus the ram vehicle may not reach the target vehicle and will be moved back to a spot if it is immobilized.

14.2.1. Both players roll a D6. If the ramming players roll is equal or higher than the defender the ram takes place.

14.2.2. If the ramming tank is faster than the target tank the ramming player adds +1 to his roll.

14.3. Both the ramming and rammed vehicle can suffer damage in a ram event. There is no penetration roll, just a damage rolls. The damage destruction (D) and stun (S) factors are dependent on the weight (in metric tons) difference and which vehicle is being rammed and which is ramming.

14.3.1 The Ramming/Crushing Table lists the Destruction factor and Stun factor of the weight differences between ram target and ram vehicle.

14.3.2. For each vehicle in a ram roll one D6 for location of any damage. For artillery guns or anti-tank guns roll one D6 and add 4 to the value for location of damage. Then using the (D) factor of the ram determine as would any damage to the element.

14.3.3. Each element in a ram can be stunned. Roll to stun based on the stun value from the Ramming/Crushing Table weight difference.

14.3.4. When two vehicles attempt to ram each other and succeed both are considered to be moving. Both use the moving column for their damage and stun values.

15.0 Battlefield Obstacles and Engineering -

15.1. Mines. Minefields are either marked or hidden. The player owning the terrain can determine if the minefield is to be marked or hidden.

15.1.1. If marked then elements within 25 can stop and avoid entering the field even if their tactical order were to move into them. However it is possible to have dummy marked minefield.

15.1.2. If hidden elements may try to 'sight' the mines by being next to them (0-5 GSU). Only unbuttoned vehicles may sight hidden mine fields.

15.1.3. Minefields can be from 25 to 100 GSU thick. The length could be any distance. From 25 to the entire length of the game board. The size of the minefield depends on the scenario and the scenario creator. Small 25x25 minefields would be the ones commonly placed before AT gun positions or fortifications or prepared firing pits. Full board mine-belts would be those placed in major front-line positions like borderlines or long held positions.

15.1.4. Minefields are rated from 1 to 4 classes or factors. This is the number of D10 dice rolled 'to trip' ('to-hit') A '1' rolled on a D10 will cause a moving element to trip a mine. This is per 100 GSU of minefield moved through. Moving through only a part of a minefield will reduce the number of dice proportionally, but never to less than 1 dice in any turn. Moving through 50 of a class 4 minefield will result in 2 dice being thrown. Moving 150 through a class 4 minefield would result in 6 die rolls.

15.1.5. Mine attack - For each successful tripping of a mine a detonation will occur. There are only two types of mines used in the game. They are anti-tank(AT) and anti-personal (AP).

15.2. The Anti Tank type mine can attack both the track and bottom of a vehicle. AT mines attacks as per a 120mm HE shell hit (Pen=6, D=2, S=7). The first attack is to penetrate the track armor and disable the track. Roll a D6 per the HE Variable Penetration Table. If the track is penetrated roll a second attack to penetrate the bottom armor to destroy or disable the vehicle. For armored vehicles use the lowest non-zero top/deck armor value for the bottom armor. If the armor is penetrated then the damage must be determined just as if a shell has penetrated the vehicle. If the track is not penetrated no attack on the bottom armor takes place.

15.3. The Anti-personal type mine attacks an element of infantry as a 50mm HE mortar shell (Kp=2). It also attacks a vehicle as a 50mm mortar (Pen=1, D=5, S=12). However, these only affect the
track/wheels of a vehicle and do not attack bottom armor of an armored vehicle.

15.4. Mine attacks occur immediately after moving the vehicle in the minefield. Thus an element would have to auto-sight a hidden minefield in order to avoid moving into it. If the element spots the hidden minefield it may halt at its edge. It cannot choose to 'go around' the field as it can only spot mines within 5 GSUs and would not know where the edge is. Actually an element only spots 5 GSU of hidden minefield per turn.

15.5. If the minefield is marked then vehicles and troops within 25 can stop and avoid entering the field even if their tactical order were to move into them. However it is possible to have dummy marked minefields. One cannot tell a dummy minefield from a real one unless elements stop and dig around the mines taking 3 turns to do so.

15.6. Buildings can offer shelter and protection to troops within. See Terrain Annex for rules.

15.7. Bunkers - These are hardened battlefield structures made primary of reinforced concrete or logs and sandbags. They can contain a single team or gun crew to larger size where they contain up to 2 squads of infantry. Several may be joined with passageways but are considered separate bunkers (like multiple module buildings) for destruction or stun.

15.7.1. Bunker Sizes - This are reduced for convenience into three sizes: large, medium and small bunkers. The large bunkers can hold at least two squads and their equipment, machineguns and a large artillery piece. The medium bunker will hold up to a single squad or a large gun and its crew. The small bunker will hold up to a medium size gun and crew or a team with machineguns. Bunkers are harder to hit as follows: Large, size=0, medium, size=-1 and small, size=-3. As they do not move and are often camouflaged they tend to be hard to spot unless firing from their openings.

15.7.2. Bunker Armor - This are reduced for convenience into three classes: heavy, medium and small. The small bunker will have an all around armor defense equivalent to 5cm of armor. The medium bunker will have the armor equivalent to 10cm and the heavy bunker will have an armor of 15cm.

15.7.2.1. Hits on bunkers may penetrate the armor or stun the occupants. Roll to penetrate as an armored element. If the armor is penetrated there is a +2 added to the projectile's killpower in trying to kill any occupant inside the bunker. Roll for each element within the bunker module separately. Note that AP will have a base killpower of 0 in this case.

15.7.2.2. Critical Penetration hits are allowed on bunkers for AP as well as direct fired HE. This is to represent a hit on a bunker slit. As HE does not have a critical penetration table it is defined as being 4 x the listed penetration if the variable penetration number is a '9' (a

six backed by another six.)

15.7.3. Destruction of bunkers - Because the bunker is of a material that can be gradually broken by non-penetrating hits it can be destroyed by multiple hits. But this will take time and some bookkeeping.

15.7.3.1. Each hit by a projectile that penetrates ¼ or more the armor of the bunker will cause damage equal to the HE killpower of the projectile (or 1 whichever is greater)

15.7.3.2. Each 1 cm. of bunker armor will absorb 15 HE killpower factors before failing. This failing means that the armor of the bunker is reduced one factor.

15.7.3.3. Once bunker armor is reduced to 2 cm. the bunker collapses and is no longer considered a bunker. It is considered just rubble and can no longer be reduced in thickness or protection.

15.7.4. Stun - Troops within bunkers can be stunned by hits on the bunkers, but as the shock is absorbed by the earth there is a reduced stun effect. The number needed to stun is increased by 2 if the bunker is a heavy bunker and by 1 if a medium.

15.7.4.1. The stun is rolled on each element within bunker module and not on the bunker crew as a whole.

15.7.4.2. Stunned bunker elements become unstunned if a '7' or better is rolled in Turn segment H, unstun section.

15.7.5. Bunkers sight as buttoned up vehicles.

15.7.6. Bunkers have a covered arc only 45˚ either side of the front of the bunker.

Short Cuts For Quicker play

In order to speed up play certain short cuts can be implemented.

Turn movement is broken into six segments but there really only 3 key ones. If infantry elements are not going to interact with an opponents tanks or infantry there is no need to move in a separate segment nor even break their movement into two.
All the infantry movement can be done in one of the other movement segments. Just pro-rate any movement costs for loading or unloading of vehicles.
(Infantry movement was broken into two small impulses primarily to prevent them from unrealistically chasing down tanks.) If there are no enemy AFVs to leap on then all the movement can be done in one step.

Looking up stuff on tables. After a while you will get a feel of what numbers will score a hit. If there are going to be some long range shots then rolling the dice before even looking up the numbers on a table can save some time. If the number rolled is reasonably high like an 8 or better then maybe look it up. If it is a '3' might as well forget about it.

Designer's Notes

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Welcome to the foremost, most accurate WWII land warfare game simulation system.

Overview - The basic idea of movement and combat system of Panzer War is that tanks moving the most fire the least. A tank that moves all its move in a turn will fire last in a turn. Those not moving at all will fire first and fire the most. Those that move half will fall some where in between.
Movement of tanks is broken into segments. The first segment is just for those tanks (vehicles) moving full movement allowance. The next segment is just for those that are moving half movement. The next is just for those shifting or changing their hull down protection. When it comes to tanks firing things proceed in the opposite order. First goes the stationary tanks and guns, next those moving half or shifting. Lastly, the tanks that move full may fire and the ones that are stationary can fire a second time. There are some variations and exceptions in this general concept due mostly on a tanks rate of fire. But, in general that's all there is to it.

Panzer war gunnery tables are built using a ballistic computer program that is a combination of formulas found in *World War II Ballistics: Armor and Gunnery* by Lorrin Rexford Bird and Robert Livingston, *Modern Exterior Ballistics* by Robert McCoy and *A Statistical Treatment of Various Classes of Gunnery Errors and the Calculation of Hit Probability* by Cornell Aeronautical Laboratory for U.S. Naval Weapons Laboratory, Dahlgren, VA.

Why Play Panzer War?
Why Panzer War and not some other Squad Leader like rule set? Yes, many other games covering this scale and detail seem to be some homegrown version of Avalon Hill's Advanced Squad Leader board game. With +3, +2, +0, –3 or some factor added to a basic to-hit number for each weapon for 3-5 range bands. While these probably are better for playing miniatures than SL or ASL, they are probably not a good as made for miniatures rules. Only a few rules have originality one is WRG's Armor & Infantry Rules 1939 – 1950 or their clone Firefly. Another is Combat Commander Modern rules or its WWII version called Battlefield Commander. These were written before ASL and don't take anything from them. Of course we go into pretty much detail in Panzer War and some may not care or like that much detail. For those that don't care there are plenty of more streamlined less detailed rules too choose from.
Panzer War comes with a generous helping of philosophy.
Now the Reasons:
1. Panzer War is rare in that you can calculate what the armor of a vehicle will be if you don't find it in the charts. Armor value isn't given in quatludes or some other made up factors. The armor values are basically the armor basis in centimeters multiplied by 1 over the cosine of the angle. (This will get you in very close agreement to what we would calculate, though we also would include armor quality and curvature.) Cast armor is 95% the RHA.
2. Have you ever read accounts where several tanks were knocked out in a minute or two of fierce combat? Have you ever played a game where a single tank could knock out two or three enemy tanks in a single turn? Probably not. Not unless you play Panzer War. And multiple hits can be determined from a single die roll so you save time. One of the fellows who helped shape our multiple hit rules concept was a M60A3 tank gunner. His concept of fire was three shots – three kills within 15 seconds. He demanded (and whined) until we got something acceptable to him. That is why in Panzer War a single tank, like a Tiger or Panther or PaK gun can ambush a group of Shermans and destroy 2-3 or even 4-5 in a single 75 second game turn. A Michael Wittmann commanded tank could disembowel an entire troop of tanks in a turn or two. Can any other set of rules do that?
3. Reading accounts of battle it sounds like battles take hours, even days. Indeed most do. But, total action may only be a few minutes. Most of the time is planning, readying, delays, snafues, mopping up and debriefings. I don't want to game any of that stuff, do you? The action time is what we want to represent and that is what we try to do. As what was said in the beginning of the game there can be lots of 'junk' time between actual turns. Reset your clocks after each turn if you want to write a battle report that sounds historical. "Be sure to put in your reports all the time it took chowing down and cleaning weapons", he said sarcastically.
4. Some rules have hour-long turns but in them vehicles only move 500 yards. If a turn took an hour but tanks only moved at a snails pace of 2-3 mph (24") where would the tank be at any point during that time? Say they aren't dillydallying along the way, traveling at 2 mph, getting passed by kids on tricycles. What then are they doing? Would they be at the point they were at the end of the previous turn for 58 minutes and then rush ahead to the final point? Or would they rush to the end position and

have tea there for the remaining 58 minutes of a turn? It just doesn't seem realistic either way. Even if this is suppose to represent some sort of 'friction'. There is more friction for some armies than others. Why not represent this national difference as well?
To paraphrase Major A. H. Amin:
One of the main reasons of slowness of British armor operations was the fact, that with a few exceptions, there was a tradition of leading from the rear. Decision-making was thus done at a snail's pace. As the command was apart from the front all sorts of false and exaggerated reports were accepted as the Gospel truth.

Dates
Dates on many vehicles and some ammunition types are not when they were produced but when they showed up in battle in significant numbers or were mentioned in history. For German and Russia a new type of weapon this was usually at the start of some offensive when a good number were available. If no mention of them was found I usually allow 3 months delay time for their introduction. For American equipment there was a considerably greater delay since it had to be shipped across an ocean to reach the front line. Also, there were built up of inventories before launching a landing somewhere so there were cases production ended on a model before it even saw combat.

Definitions:

Rounded armor – The round factors are unique to Panzer War. These are easily integrated into the game system thanks to the variable penetration rule. Roundness is only given to a turret armor face if the ricochet will clear the vehicle. If it merely channels it into another face then roundness is not awarded. **Example:** The lower gun mantle of the German Panther tank is not awarded a 'r' even though it is clearly round. This is because it can deflect a striking shell onto the drivers compartment roof. Many semi-spherical gun mantles are only awarded an 'r' and not an 'rr' because the lower part of the round face will just deflect a striking shell onto another vehicle face while only the upper half will deflect it up and away from the vehicle.

Bolted armor – is indicated by a '+' (plus sign) between two armor values (example: 8+3). The first value is the normal plate and the second number is the add-on plate. Use the sum of both numbers. When determining if an non-HE or non-HEAT shell can penetrate the armor and the variable penetration D6 die is rolled and a '7' or higher is rolled compare use just to the first number (the one before the '+') for armor. If this number is equal or exceeded then the armor has been penetrated.

Spaced armor – is indicated by a 's^n' besides an armor values. The **n** is the value of the armor versus HEAT weapons. Use this number instead of the armor basis number. In addition any rounding or deflection factor of the normal aspect is taken into account in causing a -1 penetration deflection adjustment.
Example: The side turret of a German MKIVH with spaced armor is given as $4s^8$. If struck by a US Bazooka at this location the armor is effective as an 8. If struck by an AP at this location the armor is worth 4.

Per attacks by ATR (anti-tank rifles) as opposed to normal machineguns on spaced armor including some anti-tank gun-shields (noted by a s^2) use the variable penetration table for HVAP, APDS and APCR table instead of the normal AP, APHE variable penetration table. Also, treat this as a deflection hit when ATR rounds hit spaced armor. The spaced plates on German tanks originated as a defense against the Russian anti-tank guns. Later it was found that it protected pretty good against the Bazooka.

Underlined armor – is indicated by underlining (<u>10</u>) the armor basis. This indicates the armor is highly angled to the horizontal. This armor is treated like all other armor except when struck by APDS, APCR, HVAP. This armor tends to deflect APDS, APCR, HVAP projectiles. It tends to increase the penetration of 'SE' rated shells.

Anti-deflection armor - is indicated by a "a" next to the armor value. This indicates this the armor is highly angled to the front of the vehicle hull. Treat this armor as a deflection (or rounded) when the attack is coming from the direct front of the vehicle. If the fire is coming from an angle 30˚ to 60˚ from the front treat this armor as normal (no deflection.) Example of this armor would be the front hull of the JSIII 'pike'.

Track as armor – Track is not really armor plate but in PW track also means road wheels, axles, idler wheels and other running gear components. A certain amount of energy is required to destroy or damage this equipment. The components alone can disrupt the flight path of an attacking shell such that an amount of energy is lost on passing through these components. When struck by a shell on the side in certain areas an on-coming shell will have to pass through some part of the running gear to reach the side. This can act as additional armor for the side wall in those cases. When two armor values are separated by a '^' the first number is the track/running gear armor basis. The second number is the total of both running gear and side armor. If the penetration by the shell equals or exceeds this second number then both the track and the

hull have been penetrated. Roll to damage both independently. If only the first number is equaled or surpassed then roll only to damage the track.

Size – We had to define vehicles as to their sizes. Since we quantified everything else we decided to quantify the sizes.

There wasn't a lot of data showing the effect of size had on hit probability. The only thing of significance found so far was 17 pdr testing vs. hull up (9') targets and hull down (3') targets. This is what we based our rules on. When computing the various to hit probabilities it was found that a 17 pdr had a difference of about 6% drop in chance to hit for every foot of vertical height distance at about 1000 yds. It also dropped by slightly less than that a greater ranges. And 9 feet at 1000 yds presents a very similar size target as that used by the Germans of 2.5 meters at 1000 meters.

Our +1 / -1 system varies by 10% a 10% change in the to-hit number would mean the height distance should be about 18 inches or 460mm. So starting with bands outward from the standard 2.5 meter target we compile the following size definition table: (7/16/02)

	vehicle or target
Vertical (meters)	**size**
0.890 - 1.349	-3
1.350 - 1.809	-2
1.810 - 2.269	-1
2.270 - 2.729	0
2.730 - 3.189	+1
3.190 - 3.649	+2
3.650 - 4.109	+3

Weight Class

This is only important in determining if a vehicle struck by a shell is stunned or not.

Tons	**Class**
Under 10	0
10.0 - 20.0	1
20.0 - 30.0	2
30.0 - 40.0	3
40.0 - 50.0	4
50.0 - 60.0	5
60.0 - 70.0	6

Track mass

This is how we rate track armor.

Vehicle Tons	**lbs.**	**Armor Basis**
Under 5	11,000	.5
5 – 9.9	11,001-21,999	1
10 – 17.9	22,000	1.5
18 –29.9	39,600	2
30 – 49.9	66,000	3
50 – 69.9	110,000	4
70 - 89.9	154,000	5
90 - 119.9		6
120 - 159.9		7
160+		8

Rate of Fire		**This is how PW rates ROF**	
REAL	**Game**	**REAL**	**Game**
25+	10	6	5
18-24	9	4-5	4
13-17	8	3	3
8-12	7	2	2
7	6	1	1

As the rate of fire increases the limiting factor becomes target obscuration. Tests show that the average time of obscuration varies from 3.5-5.8 seconds at 1000 yds. At 5.8 seconds the maximum ROF is 10.

Revisions and Additions

7/14/2020 10.3.10 Sturcture destruction.
1/7/2020 Table of turret rotation effects. Page 14
10/16/2017 Communications clarified
9/27/2014 Added hulldown rules for sponson and secondary hull mounted guns.
8/15/2013 Revised the ballistic model for gun tables,
4/22/2013 Finally added Hulldown dead zone table.
12/22/12 Gun tables revised using a new ballistics formula based on ranging error and dispersion.
05/08/07 Anti-deflection armor defined.
11/01/06 8.12 Suppressive fire fixed.
10/29/06 12.9.4.2 Equal or lower to disperse broken inf.
10/28/06 Revised ramming rules.
10/25/06 Clarified bolted armor.
05/24/06 Generating scouts from small platoons.
02/20/06 Clarified Overwatch first sight fire. 7.9,8.8
01/14/06 Added section on bunkers. 15.7.
09/10/05 Added some quick play suggestions.
06/25/05 8.4.3. Acquired targets
05/17/05 Suppression language clarification.
05/14/05 14.0 Ramming rules.
04/27/05 Suppression is +4 above that needed to kill. This was stated as +5 in one passage.
04/12/05 9.10.4 Unbuttoned tank commander killed.
01/22/05 12.12 Flamethrowers
12/29/2004 5.03 Aircraft rules moved to separate module.
12/23/2004 5.02 Edits
11/28/2004 5.01 Made some edits in examples.
11/18/2004 Edited and re-formatted for PDF.
5/23/2004 Multiple spotting rounds - ranging bracket
4/16/2004 More Designer notes
2/16/2005 15.0 Mines and Engineering

8/4.2003 8.17 Multiple vehicle weapons firing

6/19.2003 9.1.5 Deflection side multiplier
6/8/2003 Artillery allocation/Maintain radio contact
6/6/2003 Gun barrel hits. Aiming high/low.
5/26/2003 Explanations of orders
5/25/2003 12.8.10 Suppression rules.
5/20/03 9.7 Track Damage; Spaced armor