

TAC II


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War Gaming Rules For Modern Combat From The Cold War Era Through Today



Photo: Allen Rockwell Vehicles: GHQ Structures: GameCraft Miniatures

Vehicle Cards, charts and tables mentioned in this book can be downloaded for free at
www.tac2game.com

CV9030		ROF																
30mm Auto Cannon		4																
		Conventional Fire																
		Round	0-200		250-350		400-1100		1150-1800		1850-2250							
30mm		15		12		9		6		3								
Moving	30mm	0-500	125	550-1000	115	1050-1500	95	1550-2000	75	2050-2250	55	2300-3500	35					
Stationary	30mm	0-500	125	550-1000	115	1050-1500	95	1550-2000	75	2050-2250	55	2300-3500	35					
Front/Rear	35	5	100	90	30	90	80	40	70	69	60	30	60	70	10	31	90	10

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TAC II Introduction	9
Part 1: General Parameters	10
Section A: Basics	10
Rule 1: Game Scale	10
A. Ground Scale vs Actual Scale	10
Rule 2: The Referee	11
A. Generate the Scenario:	11
B. Prepare and Maintain the Turn Record:	11
C. Expedite Play:	11
D. Remain Neutral and Fair:	11
Section B: The Battlefield	11
Rule 1: The Map	11
Rule 2: Terrain	11
A. Natural Contours:	11
B. Vegetation:	12
C. Man-Made Structures:	12
Section C: General Game Mechanics	12
Rule 1: Sequence Of Play	12
A. Movement Phases:	13
B. Fire Phases:	13
Rule 2: Movement	13
A. Movement Allowances:	13
B. Terrain Effects on Movement:	14
C. Movement Effects on Firing:	14
D. Set-Up Time:	15
E. Dismounting:	15
F. Facing and Backing Up:	15
Rule 3: Visibility	16
Rule 4: Spotting	16
A. Which Units May Spot:	16
B. Spotting During Movement:	16
C. Spotting During Fire:	16
D. Spotting Procedure:	16
E. Alert to Presence of Enemy:	17
F. Hidden Units:	17
G. Handing Off Targets:	17
H. "Networked" Units:	17
Rule 5: Recon By Fire	17
Rule 6: Morale	18
A. Determining Combat Proficiency (CP) Ratings:	18
B. Use of the CP Rating:	18
C. Morale Checks Due To Losses:	18
D. Surprise Fire:	19
Part 2: Direct Fire	19
Section A: Basics	19
Rule 1: Fire Priority	19
A. Determining Base Fire Priority:	19

B. Order of Firing:	19
C. Multiple Shots:	19
D. ATGMs:	20
Rule 2: Rate of Fire	20
Rule 3: Target Acquisition	20
Section B: Anti-Armor Fire	21
Rule 1: Hit Procedure	21
A. General Procedure:	21
B. Anti Armor Fire Examples:	23
Rule 2: Catastrophic Hits	24
Rule 3: Antitank Guided Missiles (ATGMs)	24
A. Spotting ATGMs:	24
B. Effects of Spotting an ATGM in Flight:	25
C. Suppression/Destruction:	25
D. First Generation ATGM Suppression:	25
E. Reloading:	25
F. Portable ATGMs:	26
G. ATGM Combat Examples:	26
Rule 4: APC Bail-Out	27
Section C: Conventional Fire	27
Rule 1: Firing Procedure	27
A. General Procedure:	27
B. Effects of Suppression:	27
C. Hidden Effects:	27
D. Pinning Fire:	28
E. Buttoning Up:	28
Rule 2: Infantry Organization and Firepower	28
Rule 3: Heavy Weapons Firepower	28
Rule 4: Danger Space	28
Rule 5: Close Assault	29
A. General Restrictions:	29
B. Assaulting Non-Armored Units:	30
C. Assaulting Armored Units:	30
D. Drive-Through:	30
Section D: Doctrine and Special Vehicles	30
Rule 1: Sagger Watch	30
A. Immediate Return Fire:	30
B. Target Priority:	31
C. Changes in Status:	31
Rule 2: Overwatch	31
Rule 3: Soviet Platoon Fire (Cold War Era)	31
Rule 4: Vehicles With Stabilized Guns	31
Rule 5: Russian ATGM Vehicles	31
Part 3: Indirect Fire	32
Section A: Basics	32
Rule 1: Movement and Deployment	32

A. Self-Propelled Artillery:	32
B. Hip Shots:	32
Rule 2: Artillery Observation	32
A. U.S. Observers.	33
B. Opfor Observers.	33
Rule 3: Mean Point of Impact	33
Rule 4: Deviation	33
A. General Procedure:	33
B. Subsequent Rounds:	34
C. Additional Sources of Deviation.	34
Rule 5: Firing Sheaf	35
A. General Explanation:	35
B. U.S. / NATO Procedure:	35
C. Opfor/Russian Procedure:	35
Rule 6: Rates of Fire	35
Rule 7: Registration	36
A. General Explanation:	36
B. Game Effects:	36
Section B: Fire Missions	36
Rule 1: Planned Fire	36
A. General Description:	36
B. Eligible Target Points:	36
C. Calling the Fire Mission:	36
Rule 2: Opportunity Fire	37
Rule 3: Adjust	37
A. General Procedure:	37
B. Corrections:	37
C. Check Firing:	38
D. Blind Fire:	38
E. Observer Location:	38
Rule 4: Final Protective Fire	38
A. Explanation:	38
B. Which Units May Be Assigned a Final Protective Fire:	38
C. Assigning the Mission:	38
D. Authorization to Call the Mission:	39
E. Calling the Mission:	39
F. Response Time:	39
G. Fire procedure:	39
Rule 5: Counterfire	39
A. Target Acquisition:	39
B. On-Board Counterfire:	40
C. Off-Board Counterfire:	41
D. Flat Trajectory Guns:	41
Rule 6: Special Mission Orders	41
A. Repeat:	41
B. Fire For Effect:	41
Section C: Effects of Fire	42
Rule 1: High Explosive (HE)	42

Rule 2: Improved Conventional Munitions (ICM)	42
Rule 3: Smoke	42
A. Procedure:	42
B. Example:	43
Rule 4: White Phosphorus (WP)	43
A. Smoke:	43
B. Incendiary:	43
C. Target Destruction:	43
Rule 5: Multiple Rocket Launchers (MRLs)	44
A. Firing:	44
B. Orders:	44
C. Deviation:	44
D. Effects:	44
E. Rates of Fire:	44
Rule 6: Nuclear Attacks	44
A. Method of delivery:	45
B. Procedure:	45
C. Warhead Size:	45
D. Blow-Down:	45
E. Limits on Use:	45
Rule 7: Chemical Attacks	46
A. Types 'of Agents:	46
B. Methods of Delivery:	46
C. Initial Gas Cloud:	46
D. Endurance:	46
E. Drift:	46
F. Effects:	47
G. Protection:	47
H. Counterfire:	47
I. Limits on Use:	47
Section D: Off-Board Artillery	49
Rule 1: Placement	49
Rule 2: Displacement	49
Rule 3: Tactical Missiles	49
A. Procedure:	49
B. Deviation:	49
C. Effects:	49
D. Limits on Use:	49
Section E: Doctrine	50
Rule 1: Dedicated Battery	50
A. Explanation:	50
B. Procedure:	50
C. Effect:	50
D. Limitations:	50
Rule 2: Fire Timetable	50
Part 4: Optional / Advanced Rules	51
Introduction	51
Section A: Basics	51

Rule 1: Communication	51
A. Wire Communication:	51
B. Radio Communication:	51
C. Effects of Communication Breakdown:	52
Rule 2: Command Control	52
A. Effects:	52
B. Reestablishing Command Control:	53
C. Headquarters Out of Control:	53
Rule 3: Ammunition	53
A. Ammunition Supply:	53
B. Battle Sight Round:	53
C. Limited Ammunition:	54
D. Standard Mixes:	54
Rule 4: Maintenance	54
A. Availability of Maintenance:	54
B. Previous Use:	55
C. Intrinsic Reliability:	55
Rule 5: Crossing Water Barriers	55
A. Fording:	55
B. Swimming:	55
C. Ferries:	55
D. Snorkeling:	55
E. Bridging:	56
Rule 6: Night	56
A. Means of Night Vision:	56
B. Equipment Availability:	57
C. General Effects:	57
D. Nuclear Attacks:	57
Section B: Air Power	58
Rule 1: Tactical Air Strikes	58
A. Availability:	58
B. Attacks:	58
C. Flight Path:	58
D. Types of Ordnance:	58
E. Air Superiority Aircraft:	59
Rule 2: Helicopters	60
A. Movement:	60
B. Spotting:	61
C. Firing:	61
D. Dogfights:	61
E. Transport of Troops:	62
F. Overfires:	62
G. Miscellaneous Effects:	62
Rule 3: Tilt Rotors and V/STOL Aircraft	62
Rule 4: Paratroopers	62
Rule 5: Tactical Recon	63
Rule 6: Air Defense Artillery	63
A. On-Board Weapons:	63

B. Off-Board Weapons:	64
Section C. Atmospheric Conditions	64
Rule 1: Wind	64
Rule 2: Weather	64
A. Rain:	65
B. Winter:	65
C. Fog:	65
D. Blowing Sand:	65
Section D: Engineering	65
Rule 1: Mines	65
A. Emplacement:	65
B. Spotting:	66
C. Removal:	66
D. Effects:	66
Rule 2: Fortifications	67
Acknowledgments	68

TAC II Introduction

TAC II
By Allen Rockwell
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TAC II was originally conceived in the early 1980s as an ongoing project designed to create and maintain current data sheets for modern vehicles and weapons. At the time that I came up with the idea for TAC II, I was using a rule system called "TACFORCE" that was published in 1980 and was sadly never republished or updated. I liked the TACFORCE rules and the mechanics of the game, but most of all I liked the vehicle card system that the game used. The card system made game play very quick and smooth. All the vehicle cards in the TACFORCE rule system were vehicles and weapon systems that were considered "modern" at the time. However, many for the "modern" vehicles in the game were being replaced in the real world even as the ink dried on the rule books.



TAC II was not initially meant to be a complete gaming system in itself. TAC II was intended to provide complete and updated information on modern NATO, Warsaw pact, Third World and neutral countries' armored fighting vehicles ranging from the Cold War era through today. After many years of compiling modern vehicle and weapons data, I began making replacement vehicle cards that could be used with TACFORCE. At the time of this writing, it's been 41 years since the TACFORCE rule books were printed and sold, making it impossible for new gamers to find and use these rules. With that in mind, I set out to do a complete re-write of the rules making them compatible with ultra-modern vehicles and weapons and combat technologies. The result is the book you are reading now, TAC II.

One of the many changes I made to the original system was converting to a system where all distances are measured in meters instead of inches, this allows the rules to be used with miniatures of any scale.

If you have older TACFORCE vehicle cards, you can use them along with your new TAC II cards, you will just need to convert your existing TACFORCE cards to meters. Furthermore, you will note that the penetration factors and armor factors are rated on a 1 to 100 scale on the TAC II Vehicle Data Cards. If you use these cards with original TACFORCE cards, you will simply need to divide these numbers by 10. For example, a penetration factor on TAC II cards of 190 is equal to a penetration factor of 19 on a TACFORCE card.

All the vehicle and weapon data is in meters, so you will need to decide on a ground scale for your game. For 1/285th scale (6mm) I find that 1" = 50 meters is a decent compromise between scale and playability. For 15mm gaming, 3 inches = 50 meters might be a good scale, and for 20mm gaming, you might use 4 inches = 50 meters. Ground scale is ultimately up to you to decide. You will probably want a measuring tape marked in meters for your gaming scale. The easiest way to do this is to visit your local fabric store and buy some ribbon and mark it off with a Sharpie permanent marker.



Part 1: General Parameters

Section A: Basics

Rule 1: Game Scale

Each complete turn represents one minute of actual time. Each playing piece represents one vehicle, gun, or group of infantry (squad or fire team) . All measurements are in the rules and data sheets are listing in meters so that these rules can be used with any scale miniature. The table on the right gives some recommended ground scales for playing at various scales. Determining your ground scale is ultimately up to you.

Scale			
1/285th (6mm)	1 Inch	Equals	50 Meters
15mm	3 Inches	Equals	50 Meters
20mm	4 Inches	Equals	50 Meters
28mm	6 Inches	Equals	50 Meters

A. Ground Scale vs Actual Scale

People that are new to miniatures gaming often ask why there is a scale for miniatures and different scale for distances (Ground Scale). It would be great if the miniatures scale and ground scale were the same but in most cases this simply not practical. The problem with using a ground scale that is the same as the miniatures scale can be seen in the photo below. In this photo you see a set of game boards that belong to the author, the entire setup is made up of 18 individual boards, each one is 20" x 20". One of the reasons 20" was chosen for the board size is because at a ground scale of 1" = 50 meters, each board is one square kilometer. If a true 1/285th scale ground scale was used it would be aprox. 7" = 50 meters. You might be thinking "what's the problem with that?, that would be perfectly realistic". Yes, a ground



scale of 7" = 50 meters would be very realistic, but it creates real problems for the game.

One problem is vehicle movement; Image you have an M1 Abrams at the far end of the table, and it's on road movement is 1100 meters per turn. 1100 meters at a scale of 7" = 50 meters is 154 inches of movement per turn or almost 13 feet. This means that an M-1 could move from one end of the table to the other end of the table in one game turn.

The other problem is firing ranges, at a true 1/285th scale ground scale, a 50 caliber machine gun could cover the entire table, and larger guns could cover two or three table lengths. If you had that sort of

space to play a game that would be great, but most people do not have that much space. So, the compromise is a smaller ground scale. With a 1" = 50 meters scale, that same M-1 moves about one individual board length per turn instead of the entire table length, and it can fire just over 3 board lengths rather than across multiple tables.

Rule 2: The Referee

TAC II is played between two players or two teams of players and is moderated by a referee or group of referees. The referee or referees must be intimately familiar with the rules and serve several functions as outlined in later rules. In addition to those specific functions, the referee has three major responsibilities.

A. Generate the Scenario:

The referee should be knowledgeable in the areas of military hardware, weapons systems and be able to generate plausible scenarios. In so doing, he will determine the terrain over which the battle will be fought, determine initial and reinforcing assets of each side, and decide how much intelligence concerning the opposing force is available to each side. He should also prepare a battlefield map and player unit record sheets. To assist in creating balanced opposing forces, a Vehicle Cost Table is available on the TAC II website. This table can be used by assigning a point value for each side and then creating forces that fall within that "cost" budget. Alternatively a referee may allow players to select their own vehicles from the Vehicle Cost Table based on a predetermined "budget".

B. Prepare and Maintain the Turn Record:

The referee should construct a turn record chart on ruled paper, with one line per game turn and one column per game phase. Numerous operations conducted in the game, most notably those involving indirect fire, involve delays of one or more turns, or occur continuously or intermittently over a period of time. Marking when these actions were initiated and what activity will occur in each appropriate phase will enable them to be executed smoothly and easily. Failure to do so will result in chaos. For your convenience, a Turn Record Sheet is available for download from the TAC II website.

C. Expedite Play:

The referee must be sufficiently well versed in the rules to provide quick interpretations and settle whatever rules disputes arise. A competent and conscientious referee will enable the play of the game to proceed smoothly and rapidly.

D. Remain Neutral and Fair:

A referee needs to remain neutral and make ruling for both sides fairly and without favoring either side. It's very easy to favor one side over the other especially when the referee is the same nationality as one of the sides in the conflict. This must be avoided at all costs, most players can pick up on this and if they feel that they are being treated differently they will cease to have fun and probably lose interest in the game and give up.

Section B: The Battlefield

Rule 1: The Map

The referee should draw a map for each scenario on graph paper, with one inch equal to 500 meters being a convenient scale. A heavy black grid should be superimposed, each square of which should correspond to one kilometer (20 inches on the playing surface in 1/285th scale). After the referee has created the map, he should make two copies of it and give one to each of the two teams. The players will use the maps to plot pre-planned artillery concentrations, final protective fire lines, the location of hidden units, etc. The referee should draw on each team's map its respective *FEOT* (forward edge, our troops) beyond which they may not initially deploy units. In some cases, this may correspond to an edge of the map for one side, in which case that side would start the game with no units deployed on the board.

Rule 2: Terrain

While it is possible to create a nearly exact representation of the terrain over which an engagement is to be fought, that is generally not the easiest or most productive way of creating the terrain on a gaming table. A series of conventions should be adopted by the players which are easily recognized by all of them to identify the following three types of terrain .

A. Natural Contours:

Before the game begins the referee should determine the steepness of any terrain that slopes up at over 15 degrees. As a general rule, all modern vehicles can climb slopes up to 15 degrees at full speed and climb slopes between 15 and 30 degrees at half speed. As a rule, slopes over 30 degrees are not climbable by vehicles. Where slope steepness can affect the game, the steepness should be marked on the map and/or playing area. If desired, the referee may decide not to mark slope steepness, and instead use a protractor to determine steepness as needed during play. This makes it difficult for players to know in advance how the slope will effect their movement before committing to the climb. Finally, the referee should mark the locations of streams and rivers, indicate how deep the cut of the bank is, and whether the cut is vertical or more gentle.



Wargaming Boards of Fulda Gap region at Ft. Sill Oklahoma - 1984

B. Vegetation:

When playing scenarios such as Central Europe you need to represent the area accurately with heavily wooded areas. As a general rule, a minimum of 10-20% of the playing surface should be covered with vegetation (other than grass). Remember that the average maximum visibility in central Europe is about 1500 meters, largely due to vegetation. Most of the vegetation represented should be light woods, there being virtually no remaining virgin forest in the area. When playing desert scenarios the referee should make an effort to limit sight lines with structures of mounds of sand. A playing surface with clear views of several kilometers would make for an uninteresting game.

C. Man-Made Structures:

Man made structures include built-up areas, roads, bridges, railroads, etc. Built-up areas should be shown by single model buildings representing single buildings. The referee should determine if these are wooden or stone/concrete buildings.



Vehicle: GHQ - Structure: GameCraft Miniatures

Section C: General Game Mechanics

Rule 1: Sequence Of Play

The game is played in a series of turns, each representing one minute of real time. Each game turn is made up of four game phases:

1. Opfor Movement Phase
2. Opfor Fire Phase
3. US Movement Phase
4. US Fire Phase

Note: In these rules I use the terms US and Opfor (Opposing Force), you can substitute those words with anything you like, such as:

NATO and Warsaw Pact
Team 1 and Team 2
The Good Guys and The Bad Guys
West Germany and Warsaw Pact
US and Iraq
The Coalition Forces and Iraq

... or whatever terms you would like to use. I needed to choose a term for the rules and US and Opfor were the terms I chose.

During the Opfor movement and fire phases the Opfor player is termed the phasing player and the US

player is termed the non-phasing player. During the US movement and fire phases these roles are reversed.

A. Movement Phases:

In each movement phase the phasing player may move any or all of his units up to the limits of their movement allowances. Both sides may move their aircraft up to the limits of their movement allowances. Movement in a movement phase is conducted in the following order:

1. The phasing player moves all his units (ground and aircraft).
2. The non-phasing player moves all his aircraft.

B. Fire Phases:

Both players may fire in each fire phase. Players may fire those units which are eligible to fire as explained in Part 1, Section C, Rule 2, Movement. All aircraft may fire. Fire during a fire phase is conducted in the following order:

1. Air Defense Fire: All air defense fire against hostile aircraft is resolved.
2. Aircraft Fire: All aircraft units fire.
3. ATGM Declaration: Any player who wishes to fire ATGMs (antitank guided missiles) must so declare and specify the target of each missile. Note that the actual resolution of this fire does not take place until step 7.
4. ATGM Spotting: Units which are eligible to spot airborne ATGMs attempt to do so. Any evasive actions (dodges) to be undertaken must be declared at this time.
5. Indirect Fire: Both sides resolve all indirect fire missions scheduled to arrive that phase.
6. Direct Fire: All direct fire other than ATGMS is resolved (based on Fire Priority, see Part 2, Section A, Rule 1, Fire Priority).
7. ATGM Resolution: All ATGM fire is resolved. ATGMs launched from vehicles or launch teams which were destroyed or suppressed by fire during previous steps of the phase automatically miss.

Rule 2: Movement

Ground units move and conduct various movement-related operations during their own movement phases. All units have a movement allowance expressed in meters which may be used for movement or movement-related operations. The movement of aircraft is covered in the air rules.

A. Movement Allowances:

All dismounted infantry units have a movement allowance of 50 meters per friendly movement phase. If a dismounted infantry unit is under fire or within 500 meters of the impact point of artillery fire, its movement allowance is increased to 100 meters per friendly movement phase. At certain times at the discretion of the referee an infantry unit may make a "dash to cover" of 150 meters. Every vehicle has a movement allowance printed on the Vehicle Data Sheets.

1. Infantry Movement On or Within Buildings

Infantry moving on or within buildings requires the referee to make some judgement calls. Using normal movement of 50 meters per turn will not work since ground scale and miniatures (buildings) scale is not the same. Take for example the building shown in the photo, the model measures 3" wide by 2" deep and 3" tall. Using the ground scale of 1"=50 meters, this building would be 150m x 100m x 150m tall. Based on those dimensions, the two soldiers on the top of the building along the front edge would take two turns (2



Figures: GHQ - Structure: GameCraft Miniatures

minutes) to move to the back edge of the building. In reality that move would probably take less than 30 seconds (1/2 turn). If the soldier on the ground floor wanted to join his buddies on the roof he would probably have to move into the center of the building (one turn) and then climb about two flights of steps per turn (3 turns) and then come out in the center of the roof and spend one more turn moving to whatever edge of the roof his buddies are on. The entire trip would take 5 turns and the game could be over by then.

In actual 1/285th scale (about 7 meters per inch) this building really measures about 20m x 14m x 20m tall. A soldier in decent shape could start a movement phase at the front door and end the phase on the roof. As you can see, the judge will have to make some judgement calls when it comes to infantry moving in or on large structures.

B. Terrain Effects on Movement:

Terrain affects the movement ability of units differently depending on the terrain type and mobility type of the unit. Broadly speaking, there are three types of movement categories: foot-mobile, wheel-mobile, and track-mobile. The effects of terrain are explained below and recapitulated on the terrain effects chart.

1. Natural Contours:

Dismounted infantry is not affected by slopes of 30 degrees of steepness or less. Dismounted infantry has its movement halved when moving up or down slopes of greater than 30 degrees steepness. Dismounted infantry may cross vertical cuts of up to one meter in height by paying a penalty of half their movement allowance. Vertical cuts (other than sheer cliffs) of greater than one meter in height may be crossed (climbed) by dismounted infantry at a rate of one movement phase for the first five meters of height and one additional movement phase for each subsequent two meters of height.

As a general rule, all modern vehicles, wheeled and tracked, can climb slopes up to 15 degrees at full speed and climb slopes between 15 and 30 degrees at half speed. Generally speaking, slopes over 30 degrees are not climbable by vehicles.

2. Woods:

Dismounted infantry is not affected by woods. Both wheeled and tracked vehicles pay double movement costs (each meter moved counts as two meters of the unit's movement allowance) when moving through woods. Neither wheeled nor tracked vehicles may move farther than 50 meters into dense woods. That is to say that no vehicle can be placed more than 50 meters from the edge of a dense woods.

3. Roads:

All dismounted infantry moves at its normal rate on a road. All vehicles move at their printed road movement allowances. Units on roads ignore slopes as roads are generally graded to a shallow enough slope to permit rapid movement.

4. Water Barriers:

Movement across water barriers is covered in Part 4, Section A, Rule 5, Crossing Water Barriers.

C. Movement Effects on Firing:

Units which move their full movement allowances in a movement phase may not fire anti-armor fire in the following fire phases and may not fire conventional fire at full effectiveness. A unit may increase its ability to fire by executing a halt. There are three types of halt.

1. Full Halt:

A unit, which does not move at all in a friendly movement phase is executing a full halt, and is referred to as being *stationary*. Any unit which executes a full halt is eligible to fire both in the immediately following friendly fire phase and in the next enemy fire phase. ATGMs may only be fired from a full halt. Units executing a full halt are fired at as stationary targets.

2. Short Halt:

Units, which move one half of their movement allowances or less (as modified by terrain) in a

friendly movement phase are executing a short halt. Units which execute a short halt may fire anti-armor fire in the immediately following friendly fire phase, but not in the next enemy fire phase. ATGMs may not be fired from a short halt, nor may any weapon which has a fixed set-up time on its data card. Infantry may not fire any antitank weapons (such as LAW or RPG-7) from a short halt. Units executing a short halt may fire conventional fire in both the friendly and enemy fire phases, but their fire factors are halved. Units executing a short halt are fired at as moving targets.

3. Emergency Halt:

Emergency halts are declared during a friendly fire phase. If a unit has moved more than half of its movement allowance in a movement phase and is then fired on by a previously unspotted enemy unit, it would normally be unable to return fire in either that fire phase or the next enemy fire phase. In this situation, it may declare an emergency halt.

An emergency halt enables the unit to fire anti-armor fire in the next enemy fire phase. In its next movement phase it may only move half of its movement allowance or less, must remain stationary to qualify for a short halt fire, and may not qualify for a full halt fire at all. Emergency halt vehicles are fired at as moving targets in the phase they fire in. If they choose to remain stationary (to qualify for a short halt fire) in their next movement phase, they are fired at as stationary targets.

A unit on sagger watch (see Part 2, Section D, Rule 1) which observes the fire of an ATGM at a vehicle of the unit it is watching for may execute an emergency halt for the purpose of firing in that phase. The effects on its next move are identical.

4. Firing On The Move:

Units which move more than half of their movement allowances are not halting at all and may not fire any antitank fire. This rule does not apply to vehicles with stabilized guns (see Part 2, Section D, Rule 4, Vehicles with Stabilized Guns). Units which require any set-up time to fire may not fire on the move at all, nor may dismounted infantry fire on the move. Moving vehicle units may fire conventional fire in both the friendly and enemy fire phases with their fire factors halved .

D. Set-Up Time:

Various towed and self-propelled weapons require time to ready them for firing. This time, in complete game turns, is listed below. No movement or fire is allowed while the unit is setting up. A like amount of time is required after the unit has fired to ready it for movement again. Units designated as set up at the beginning of the game are assumed to be already set-up and ignore set-up time.

Towed Artillery	4
Self Propelled Artillery	2
Self Propelled Mortar	.5
Towed AntiAircraft Guns	2
Self Propelled AntiAircraft Guns	1

E. Dismounting:

Infantry requires one full movement phase to mount or dismount from a truck or APC. To mount, the infantry must begin the movement phase within 25 meters of the vehicle. When dismounting, the infantry may be placed anywhere around the vehicle providing the infantry stand is touching the vehicle or vehicle stand. Unless otherwise noted APCs and trucks have a capacity of one squad.

F. Facing and Backing Up:

The direction a vehicle unit is facing will be important to its target configuration when resolving direct fire. Although fire is resolved after movement, fire and movement are actually taking place simultaneously. Therefore, the facing of a vehicle is determined not by the direction it may be facing at the end of movement, but rather by its *mean axis of advance*. The mean axis of advance is an imaginary line drawn between its initial and final position. The vehicle is placed in its final position facing the direction of its mean axis of advance. (see Part 2, Section B, Rule 1, Subsection 2b for more info on this topic). An exception to this rule is in the case of a vehicle backing up. A vehicle may back up in its movement phase

instead of advancing. A vehicle's movement allowance is quartered when backing up and the vehicle is faced in the direction opposite its mean axis of advance.

Rule 3: Visibility

Normal daytime visibility is 5000 meters. Overcast, light mist, dust, etc. can rapidly reduce this to 3000 meters. Airborne observers can generally see at least twice as far as ground observers.

Night visibility is severely limited and even with a bright moon is generally still no more than 500 meters. Overcast or a new moon will reduce this to about 100 meters.

Rule 4: Spotting

A unit may not be fired on until it is spotted. Once a unit has spotted an enemy unit, it has acquired it as a target, may fire at it, and may report the location of the unit to other friendly units. (Reporting the location of an enemy target will be referred to in the rules as handing off the target.)

A. Which Units May Spot:

Units spot by platoons. That is, each platoon attempts as a whole to spot hostile units. If the platoon is successful, each vehicle, gun, or infantry stand of the platoon is considered to have spotted the enemy unit. Units smaller than platoons (for example, forward observers or a rifle squad separated from the rest of the platoon by a large distance) may spot as separate units, but if successful must hand off the target for other units to acquire it.

B. Spotting During Movement:

Units may attempt to spot enemy units during each movement phase. Units are limited in the number of spotting attempts they may make during a movement phase as outlined below:

Dismounted platoons: 3 spotting attempts.

Open vehicles: 2 spotting attempts per platoon.

Buttoned-up armored vehicles: 1 spotting attempt per platoon.

Units smaller than platoons: 1 spotting attempt.

Spotting is done after all movement for the phase is completed. Each player must indicate what the target of every spotting attempt is before any are resolved. Spotting attempts should be directed against specific geographic objectives, such as a woods line, a built-up area, a crest line, or an open plain. More than one spotting attempt may be directed at a single objective, indicating particular scrutiny and attention. A successful spotting will generally reveal all of the units of a similar type in that target area. If units of different types are in the target area, a separate spotting check should be made for each type. Generally, each spotting attempt should be limited to a target area 200 meters across if directed against covering terrain or 500 meters across if directed against open terrain.

C. Spotting During Fire:

Units may attempt to spot enemy units which fire during a fire phase. A unit which is fired at may attempt to spot each enemy unit firing at it. One attempt may be made per firing unit, a successful attempt resulting in the firing unit being spotted. Overwatching units (see Part 2, Section D, Rule 2) may attempt to spot each enemy unit firing at the friendly unit being overwatched. Sagger watch vehicles may attempt to spot enemy ATGMs being fired at the unit to which the sagger watch vehicle belongs. The attempted spot by the sagger watch vehicle is in addition to the unit's normal attempt to spot firing enemy units. Units not under fire, except as noted above, may not attempt to spot during a fire phase.

D. Spotting Procedure:

All units which may be spotted can be placed into one of five visibility categories:

1. Infantry or light crew-served weapons stationary under cover, or aircraft executing pop-up.
2. Vehicle or gun stationary under cover. Aircraft stationary (hovering) or moving directly toward observer.
3. Infantry or light crew-served weapon either stationary in the open or moving under cover (up to or along a woods line, for example).

4. Infantry or light crew-served weapons moving in the open. Vehicles or guns moving under cover. Aircraft moving across the field of vision of the observer.
5. Vehicles or guns moving in the open.

The referee will first determine if there are any unspotted units in the target area of the spotting attempt. If so, he or she will consult the spotting table and determine their visibility category. The spotting table will indicate the likelihood of spotting the target at the range at which the attempt is made. This will be in the form of a number from 0 to 100. This number or lower must be rolled on a die to successfully spot the unit. The spotting table also lists several possible modifications to the die roll caused by the activities or nature of either the spotting vehicle or the target of the spotting attempt. A dash on the spotting table indicates that spotting is not possible at that range. The notation AS indicates that the target is automatically spotted without need for a die roll.

Example: A Opfor T-72 tank is attempting to spot a US M1 tank in defilade 200 meters to its left rear. The US tank is visibility category 2 (vehicle stationary under cover) which at a range of 200 meters would normally be seen on a roll of 40 or less. However, the Opfor tank is buttoned up and attempting to spot to flank or rear which adds 40 to the die roll, making spotting impossible.

E. Alert to Presence of Enemy:

If a unit fires, all subsequent attempts to spot it while it remains in or near the position from which it fired are done using the *alert to presence of enemy* modifier. If a normal spotting attempt against a moving unit could result in a successful spot but does not, the unit attempting to spot nevertheless becomes alert to the presence of the enemy and on subsequent attempts to spot that unit uses the listed modifier.

F. Hidden Units:

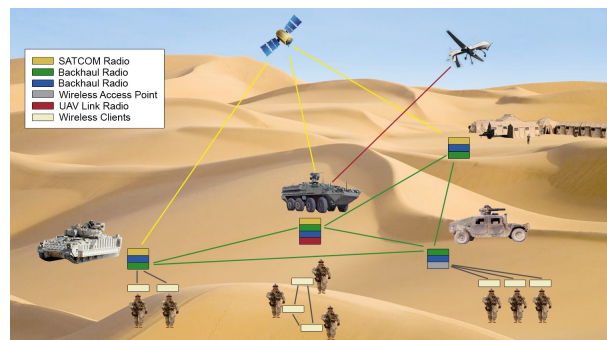
Units which begin the game on the board concealed should be kept off the board until spotted. Their location must be marked on the player's map and made known to the referee. Units which become hidden during the game by moving into dense woods or behind a hill may be removed from the board and their positions marked on the referee's map.

G. Handing Off Targets:

Once a unit has spotted a target it may hand off the target to other friendly units. Each fire phase the unit may either hand the target off to all units subordinate to it or to its immediate headquarters. For example, a tank company headquarters spots a concealed enemy position. In the phase the spotting takes place, all vehicles of the headquarters (if there are more than one) are considered to have spotted the position. In the next fire phase the headquarters unit could hand the target off either to all of its platoons or to battalion headquarters. If the target was handed off to battalion headquarters, then in the following fire phase battalion headquarters could hand the target off to all units subordinate to it.

H. "Networked" Units:

Ultra modern units are considered to be connected via digital communications and instantly share data between vehicles. Therefore once a target is spotted by one unit, it is automatically handed off electronically to all other vehicles in the command and is considered "spotted" by all friendly assets. Once one sees it, they all see it. It will be up to the referee to determine which units have this capability, most 3rd world forces do not have this capability.



Rule 5: Recon By Fire

A player may, during any fire phase, direct fire at an area which he suspects is occupied by the enemy, even if he has not spotted enemy units there previously. This procedure is known as reconnaissance by

fire. Recon by fire will not cause casualties among troops in the area fired at but will cause them to take a control check (see Part 1, Section C, Rule 6, Morale) which, if they fail, will cause them to return the fire and thus expose their position. Due to the high degree of vigilance associated with recon by fire, any unit returning fire is automatically spotted. Return fire is resolved normally and may cause casualties. Troops are less likely to respond to a recon by fire if the fire is incapable of causing them harm. As a result, subtract one from the die roll when making an infantry control check if fired on by a non-exploding antitank round (AP, HVAP, APDS, or APFSDS) and subtract one from the die roll when making an armored vehicle control check if fired on by small arms or machine guns. All return fire resulting from a failed control check takes place after all other direct fire has been resolved. If players abuse this capability, the referee should consider using the rules on ammunition in Part 4, Section A, Rule 3, which restricts a unit's ammunition supply.

Rule 6: Morale

A unit's morale is the single most important factor in determining its ability to continue functioning under fire and avoid destruction as a unit. Morale, in the sense the term is used in the game, is represented by the unit's *combat proficiency (CP)* rating, a distillation of training, leadership, and spirit. At the beginning of each scenario the referee will determine the CP rating of each company that each side will use. Separate units smaller than a company are treated as separate companies. This information will initially be available only to the owning player.

A. Determining Combat Proficiency (CP) Ratings:

The procedure for determining CP ratings is very simple, roll a 10 sided die and halve the result, dropping fractions and then add the modifier from the chart at right. If the force you intend to use does not exist on the chart, simply find a comparable force and use it's modifier value. Note: This chart will be updated often, download the latest version at www.tac2game.com

B. Use of the CP Rating:

Whenever a unit is called on to take a morale check, suppression check, kill check, or control check it must roll its CP number or less on a 10 sided die to pass. Note that a unit with a CP rating of 10 will always pass a check.

C. Morale Checks Due To Losses:

Each time a unit of platoon strength or greater loses a sub-unit, it must roll for morale. For a platoon, this would be the loss of a single vehicle or stand of infantry. For a company this would be the loss of the last vehicle or stand of infantry in one of its platoons. For a battalion, this would be the loss of the last vehicle or stand in one of its companies, etc. The unit checking morale must roll its CP number or less on a 10 sided die to pass. Failure to do so results in the unit routing. A routed unit must move at its fastest possible rate to the nearest covered position and remain there until it successfully rallies. A *covered position* is one which cannot be fired upon using direct fire by previously spotted enemy units; in other words, a position the unit thinks is relatively safe. The

Country Code	Country	Force	Modifier
AT	Austria	Regular Army	2
AT	Austria	Special Forces (Jagdkommando)	3
AU	Australia	Regular Army	3
AU	Australia	SpecOps	3
BG	Bulgaria	Regular Army	2
CA	Canada	Regular Army	3
CA	Canada	Special Forces	3
CN	China	Regular Army	2
CZ	Czech Republic	Regular Army	2
DE	Germany	Regular Army	3
DE	Germany	Special Forces	3
EG	Egypt	Regular Army	2
ES	Spain	Regular Army	2
FR	France	Regular Army	2
FR	France	Special Forces (COS)	3
GR	Greece	Regular Army	2
IQ	Iraq	Regular Army (Gulf War)	2
IQ	Iraq	Regular Army (Present)	2
IQ	Iraq	Republican Guard (Gulf War)	2
IR	Iran	Regular Army	2
IS	Israel	IDF Regular Army	3
IS	Israel	IDF Special Forces Units	5
ISIS	Islamic State	Regular Army	1
IT	Italy	Regular Army	2
JO	Jordan	Regular Army	2
KP	Korea (North)	Regular Army	2
LY	Libya	Regular Army	1
PL	Poland	Regular Army	2
RO	Romania	Regular Army	2
RU/WP	Russia/Warsaw Pact	Elite Divisions	4
RU/WP	Russia/Warsaw Pact	First Line Divisions	3
RU/WP	Russia/Warsaw Pact	Second Line Divisions	2
RU/WP	Russia/Warsaw Pact	Third Line Divisions	1
RU/WP	Russia/Warsaw Pact	Regular Army	1
SA	Saudi Arabia	Regular Army	2
SE	Sweden	Parachute Rangers	3
SE	Sweden	Regular Army	3
SK	South Korea	Regular Army	3
SY	Syria	Regular Army	2
TR	Turkey	Regular Army	2
UA	Ukraine	Regular Army	2
UK	United Kingdom	Regular Army	3
UK	United Kingdom	SAS	4
US	United States	Marines	4
US	United States	Regular Army (Early War)	3
US	United States	Regular Army (Late War)	4
US	United States	Reserves/National Guard	2
US	United States	Seals / Rangers / Delta / ...	5
YE	Yemen	Regular Army	1

Combat Proficiency Modifiers

referee may use his own judgment in doubtful cases. A unit may attempt to rally once at the end of each friendly movement phase after the phase in which it completes its rout movement. To rally, a unit must roll its current CP rating or less on a 10 sided die. Each time that a unit routs its CP rating is reduced by 1. Players may designate rally points for units before the game, if they wish. If so, these should be marked on their maps or on a separate piece of paper. If desired, several different conditional rally points can be named. For example, a Unit may be instructed to treat a woods as a rally point until a certain objective has been seized, at which time its new rally point will be that objective. If a unit is given instructions to rally on a certain point, it will move by the fastest and safest route (in the opinion of the referee) to the rally point. Once there, the unit will automatically rally unless the rally point is under fire. If the rally point is under fire the unit is considered to have routed again, with an additional subtraction from its CP rating, and moves to the closest cover available as in a normal rout.

Units which rout off the playing area will eventually rally and return. The referee secretly rolls a 10 sided die and multiplies the result by 2. The unit returns to the field after that many turns. The owning player should be informed of its return one turn prior to its reentry.

D. Surprise Fire:

A unit is considered to have received surprise fire if it is fired on in a phase by an enemy unit of which it was not previously aware (had not spotted and was not alert to its presence). If a unit receives surprise fire and suffers losses from that fire (thus forcing it to take a morale check), the unit adds one to its die roll. If the enemy unit is not spotted as a result of the fire, the unit checking morale adds three to its die roll. (Note that casualties from surprise fire may cause a unit with a CP rating of 10 to fail a morale check.)

Part 2: Direct Fire

Section A: Basics

Rule 1: Fire Priority

Direct fire in each fire phase is not necessarily simultaneous, although in some cases it may be. The order in which units fire is determined by their fire priority numbers. Each unit has a base fire priority number and a modified fire priority number.

A. Determining Base Fire Priority:

Base fire priority numbers are determined before the scenario starts by halving the unit's CP rating and adding 2 to it. Thus, a unit with a CP rating of 5 would have a base fire priority number of $2.5 + 2 = 4.5$. A unit with a CP rating of 9 would have a base fire priority number of 6.5 and a unit with a CP rating of 6 would have a fire priority of 5. A unit's base fire priority number will remain constant throughout the scenario unless a drop in CP rating due to a rout alters it.

B. Order of Firing:

All players should first designate which units are firing and the targets of their fires. Next, players determine the modified fire priority number of each firing unit and place a numbered counter of the correct designation by the unit. All units then fire in sequence with the highest fire priority numbers firing first. All units with the same modified fire priority number fire simultaneously, but before any units with a lower fire priority number. If a unit is destroyed or suppressed by fire of a unit with a higher fire priority, it in turn may not fire that phase.

C. Multiple Shots:

Units capable of firing more than one round in a fire phase may do so, but fire only once at the time dictated by their fire priority number. After all direct fire (other than ATGMs) has taken place, all units taking multiple shots fire the rest of their shots simultaneously. These additional shots are referred to as *subsequent rounds*, and must all be directed at the same target as their first fire, and must have been declared at the start of the phase. If, for example, a U.S. tank is stationary and can fire 3 rounds in the fire phase, the U.S. player might declare "three rounds at the lead T-72." In this case, the first round would be fired during the fire priority sequence and the other two subsequent rounds fired after all units had fired. Since it is not always possible to determine immediately if a hit has disabled the target (and because

often a crew will decide to put in "insurance rounds" even if the target does appear disabled) the two subsequent rounds must be fired at the same target, even if the first round destroyed the target. This will only be important if the optional rules on ammunition supply are used.

D. ATGMs:

ATGM fire is not resolved until step 7 of the direct fire phase (ATGM resolution). In resolving ATGM fire, however, the same fire priority procedure is used.

Rule 2: Rate of Fire

Direct fire weapons have a standard rate of fire (ROF) listed on the weapon's card. The ROF number is how many rounds a weapon can fire in a complete game turn, assuming it fires at its maximum rate of fire in both fire phases. Since there are two fire phases, the number of rounds fired in each phase may be only half this number. In the case of the ROF being an odd number, the extra round must be fired in the shooters friendly fire phase. For example, a unit with an ROF of 3 would alternate firing one and two rounds per fire phase, firing two rounds in their friendly fire phase and one round in the enemy fire phase. Whenever a unit fires more than one round in a fire phase all rounds must be directed at the same target. A unit may fire more than one round in a fire phase only if it is stationary (did not move in its last movement phase)*. All small arms and machine guns have an ROF of 4, firing twice per phase. Each such shot represents a burst of rounds, but will be treated in the rules as a single shot.

*Does not apply to stabilized guns.

Rule 3: Target Acquisition

Any unit which is spotted is a legitimate target and no further target acquisition procedure is necessary. The general rule governing target acquisition is that a unit may be fired at during any fire phase after the phase in which it was spotted. That is, if a unit was spotted in a movement phase, it could be fired at in the immediately following fire phase. A unit spotted in a fire phase may not be fired at until the next fire phase. Exceptions to this rule are noted in Part 2, Section D, Rule 1, Sagger Watch, and Part 2, Section D, Rule 2, Overwatch.

Section B: Anti-Armor Fire

Rule 1: Hit Procedure

A. General Procedure:

To determine whether a hit has been achieved, go through the following steps.

1. The firing player announces which vehicle and/or weapon is firing at which target and what type of ammunition is being fired. For example, the U.S. player might say "Tank number four (an M1A2) is firing one round of APDS at the lead Russian T-72."



2. Determine the range, angle of attack, and mobility status of the target. Range should be measured in meters from center of vehicle turret or weapon to center of vehicle turret or weapon. Ranges are rounded up to the nearest 50 meters.

2a. Angles Of Attack:

There are six possible angles of attack, as viewed from the firing unit:

Front: The front of the target vehicle has a greater apparent length than does the side.

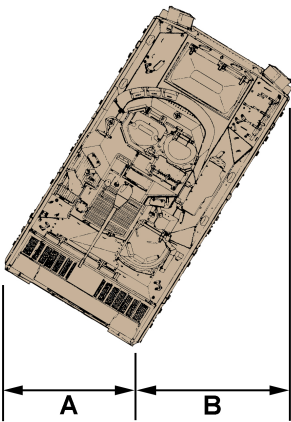
Oblique: The front of the vehicle has approximately the same apparent length as the side. (see diagram below)

Side: The side of the vehicle has a greater apparent length than does the front.

Rear: The rear of the vehicle has at least as great an apparent length as does the side.

Overhead: The firing unit is above the target unit in a position to direct fire onto the top of the vehicle, as from the upper story of a building or airborne. Overhead situations are extremely rare (except from an airborne platform) and referee judgment is called for. A convenient rule of thumb is that an overhead shot is possible if the rear deck of a tank is visible behind the turret from the weapon's position.

Defilade: A unit on the board is in defilade if it is touching a crest line with the front of the vehicle and is being fired at across the crest line.



Any vehicle may take up defilade positions behind a cut. A cut is a shallow gully, a sunken road, etc. Vehicles may not take up defilade positions in cuts deeper than two meters. A vehicle may also take up a defilade position by parking with its side touching the crest line or cut and then traversing its turret to the side. This is known as *side defilade*, and is treated as regular defilade except when attempting to dodge ATGMs, as noted in Part 2, Section B, Rule 3A1.

The mobility status of a unit is either moving or stationary, as explained in Part 1, Section C, Rule 2

Example of Oblique:

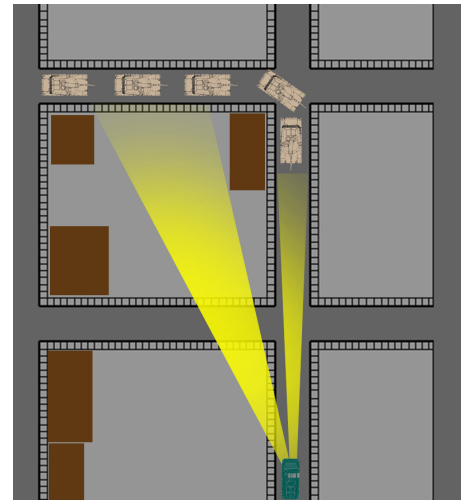
In the diagram at left, the target is being fired upon obliquely: as seen by the firing unit, the apparent length of the target's front (A) is about the same as the apparent length of its side (B).

2b. Special considerations regarding determining angle of attack.

In a game turn it is assumed that movement and firing are happening simultaneously, however in the interest of game mechanics and playability things must happen in an organized system of phases.

This is not a factor if your target is stationary, but it creates problems when your target is moving. To determine the facing of a target vehicle that is moving and changes it's facing during a movement phase it may require the referee to make a determination as to the facing for a majority of the previous movement phase.

Take a look at the graphic here and you can see that during the previous movement phase the M1 was showing it's side for about 2/3 of the time and then at the end it made a right turn and showed it front to the firing BMP.



Some players will use the technique of turning to face their aggressor at the last second thinking this will make them less vulnerable to the firing vehicle. But if we consider that the firing took place simultaneously to the movement, there is actually a good chance that the M1 would have been shot in it's side rather than the front.

In this example, you can simply consider the facing for the majority of the phase and use that facing, in this case "side", or you might consider that the M-1 was showing it's side for about 2/3 of the phase and it's front for the remaining 1/3 of the phase and then determine that as a compromise all rounds will be fired at the target's oblique. This is a decision to be made by the referee.



Vehicles: GHQ - Structures and Terrain: GameCraft Miniatures

B. Anti Armor Fire Examples:

1. Using the TAC II Vehicle Cards

On the right you see that we have two cards, one for the Swedish CV9030 and one for the Russian BMP-2. In this example the CV9030 will be shooting at the front of the BMP-2 from a range of 1300 meters. With the CV9030's 30mm gun it does not make any difference if the target vehicle is moving or stationary, but for the purposes of this example we will say that the target BMP is moving. You can see in the photo at right that the CV9030 card is showing the shooting side of the card. You can tell this because the data on the card is the weapons' data and it has a grey stripe across the bottom signifying an Anti-Tank weapon (red stripes are for ATGMs and blue stripes are for rockets). You will also notice that the BMP card is already turned over showing the target data side of the card, easily identifiable by the alternating red, blue, and grey vertical stripes and armor data on the left.

The image shows two vehicle cards. The top card is for the CV9030, a Swedish 30mm Auto Cannon. It has a ROF of 4 and a Swedish flag. The bottom card is for the BMP-2, a Russian target vehicle. It has a Target Hardness of -4, CH of 2, and armor values of 750 for Open Movement and 1100 for Road Movement. The BMP-2 card is turned over to show its target data side, which features alternating red, blue, and grey vertical stripes representing armor values for different attack types.

This is a close-up of the CV9030 vehicle card. It shows the 'Conventional Fire' table with columns for ranges: 0-200, 250-350, 400-1100, 1150-1800, and 1850-2250. The 'Moving' row shows a penetration value of 95 for the 1050-1500 range. The bottom of the card shows a grey stripe across the 'Front/Rear' armor values (35 and 5).

Round	0-200	250-350	400-1100	1150-1800	1850-2250												
30mm	15	12	9	6	3												
Moving 30mm	0-500	125	550-1000	115	1050-1500	95	1550-2000	75	2050-2250	55	2300-3500	35					
Stationary 30mm	0-500	125	550-1000	115	1050-1500	95	1550-2000	75	2050-2250	55	2300-3500	35					
Front/Rear	35	5	100	90	30	90	80	40	70	69	30	60	70	10	31	90	10

To fire, simply lay the CV9030 card on top of the BMP and slide it down until last line (Front/Rear) is the only line exposed. This is because we are shooting at the front of the BMP. Now on the CV9030 card using the "Moving" row of data because the BMP is moving, move across that row till you find the range category where 1300 meters falls. This will be the column that says 1050-1500. You will notice that the 1050-1500 column matches up with three columns on the BMP card, a red, a blue and a grey column. Because the stripe on the bottom of the CV9030 card is grey we

know that the corresponding grey column on the BMP card is the one we are interested in. You will now see that the number 69 appears on the BMP card in the grey column for this range. 69% is the chance to hit. If the shooting player rolls a 69 or less, the BMP is hit.

Determining penetration is very simple. Next to the 1050-1500 on the CV9030 card is the number 95, this is the penetration value of this round at this range. On the BMP card next to the Front/Rear text you will see the numbers 35 and 5, these are the front and rear armor values for the BMP (35 is the front). Now simply take 35 (BMP's armor) away from 95 (CV9030's penetration value) and you get 60. This is the percentage chance of penetration. If the firing player rolls a 60 or less, the BMP is penetrated and destroyed.

It takes a whole page to explain this procedure, but once you do it a few times you will see how simple and fast it is.

Rule 2: Catastrophic Hits

A catastrophic hit is one which, in addition to rendering the target vehicle inoperative, causes the ammunition and fuel to explode, blowing up the vehicle. Certain vehicles are more susceptible to catastrophic hits than others. On the Vehicle Data Sheets you will see a column marked "CH". This column will contain either a number or dash. This is the catastrophic hit number. If a penetration is achieved, roll a single 10 sided die and if the second roll is equal to or less than the CH number, the vehicle suffers a catastrophic hit. If no CH number is listed on the card the vehicle is not subject to catastrophic hits. When a vehicle suffers a catastrophic hit, all friendly units within 200 meters are forced to take a suppression check.



Rule 3: Antitank Guided Missiles (ATGMs)



Although the sequence of firing for ATGMs is different from that for other direct fire weapons, the procedures for determining hits and penetrations are identical. There are several additional rules covering ATGMs, however.

A. Spotting ATGMs:

All units which are targets of ATGMs may attempt to spot ATGMs in flight. In addition, a vehicle on sagger watch or overwatch may attempt to spot an ATGM in flight directed at a vehicle of the unit being watched for.

1. Target Spotting:

Vehicles which are targets of ATGM fire have a 30% chance (roll 30 or less) of spotting an ATGM in flight. This chance is reduced to 10% if the target vehicle is buttoned up. In both cases, the chance of spotting an ATGM in flight at night is doubled.

2. Overwatch Spotting:

An overwatch unit or vehicle may spot an ATGM in flight if it is in a position to see both the target vehicle and the ATGM launcher (even if the launcher has not yet been spotted). The chances of spotting the ATGM in flight are the same as for the target vehicle.

3. Sagger Watch Spotting:

A sagger watch vehicle may spot an ATGM in flight targeted at any vehicle of its platoon. A sagger watch vehicle normally has the same chance of spotting a missile in flight as does the target vehicle. If the sagger watch vehicle is closer to the missile launcher than is the target vehicle and is at least 50 meters away from the flight path of the missile, it has a 50% chance of spotting it (20% if buttoned up). Again, these chances are doubled at night.

B. Effects of Spotting an ATGM in Flight:

If an ATGM is spotted in flight it increases the likelihood that the launcher will be spotted while firing (as noted on the spotting chart). In addition, it enables the target unit to execute a dodge. There are two types of dodges.

1. Defilade Dodge:

A vehicle in defilade with respect to the ATGM launcher may dodge by backing up out of the defilade position. This may only be done by vehicles on a slope, as the purpose of the move is to place the target completely out of sight behind a hill. Any ATGM targeted on a vehicle executing a defilade dodge automatically misses. Vehicles executing a dodge suffer the same movement and firing penalties as if they had executed an emergency halt (See Part 1, Sec C, Rule 2C3). Units in side defilade may not execute a defilade dodge.

2. Open Terrain Dodge:

A unit not in defilade may execute an open terrain dodge. The unit is not moved at that time but is treated as if executing an emergency halt. Open terrain dodges have no effect on second generation ATGMs, but halve the likelihood (rounding fractions up) of a hit from a first generation ATGM. For example, if a 50 was needed to hit a vehicle executing an open terrain dodge, the chances of hitting it would be reduced to 25. All ATGM data cards indicate whether they are first or second generation ATGMs.

3. Dash For Cover:

If a vehicle in the open is being shot at by an ATGM and if any part of the vehicle (or base) is within 100 meters of hard cover (a building or terrain feature) it can make a dash for cover. The vehicle making the dash for cover will only be moved the minimum amount necessary to achieve cover, not any more than that amount. The result of a dash for cover is that the chance of the ATGM hitting its target is halved (rounding fractions up). For example, if a 50 was needed to hit a vehicle executing an open terrain dodge, the chances of hitting it would be reduced to 25. The penalty for this maneuver is that in the following movement phase the vehicle that made the dash for cover will have its movement allowance reduced by 50%.

4. General Restrictions:

No unit may execute a dodge in the fire phase immediately following a movement phase in which it has used road movement. If one vehicle executes a dodge, all vehicles within 50 meters of it must also execute a dodge to prevent the missile operator from retargeting on them.

C. Suppression/Destruction:

Since both direct and indirect fire are resolved before ATGM fire, the suppression or destruction of the launch team or vehicle will always cause the ATGM fired by the team or vehicle to miss.

D. First Generation ATGM Suppression:

First generation ATGMs are guided to the target by the operator through the use of a control stick arrangement which requires him to track both the target and the missile in flight. Since it is much easier to throw off the concentration of a first generation ATGM operator, when resolving suppression checks the ATGM misses if the operator fails to roll its CP rating minus two or less. For example, if a unit with a CP rating of 6 rolled a 5, its ATGM would miss even though it would not be suppressed.

E. Reloading:

Most ATGMs are launched from vehicles. In some vehicles it is necessary for the crew to expose itself to enemy fire in order to reload the externally mounted missiles and may not reload if being fired upon by direct conventional fire or in the burst radius of an indirect fire round. Russian BRDM vehicles with ATGM launchers have several launch rails, each with a missile, and have additional missiles stored in the vehicle. BRDMs are not forced to reload (although they may if desired) until all missiles already on the rails have been fired. The reload time given is the time required to replace one missile on a rail. A BRDM may not reload in the same turn it fires.



F. Portable ATGMs:

There are several different types of portable ATGMs and they all have different setup times and reload times. For the sake of simplicity in these rules, portable ATGMs take two turns to set up and once set up can fire once per friendly fire phase and are reloaded during the opponents fire phase. Portable ATGMs are supported by the transporting vehicle and must be set up in close proximity of the supporting vehicle (bases touching). The personnel manning the missile and vehicle are considered one entity for purposes of being targeted and attacked. If the vehicle is destroyed, the ATGM is considered destroyed, if the vehicle is suppressed, the ATGM is considered suppressed. And vice-versa.



ATGM base touching vehicle


Example of portable ATGM setup time: A vehicle moves into position during its movement phase of turn number 2. During its movement phase of turn number 3 it does not move and drops a “stationary” marker behind the vehicle. In its movement phase of turn 4 it remains stationary and the stationary marker is replaced with the ATGM miniature or marker and it is ready to fire in the friendly fire phase of that turn (turn 4).

G. ATGM Combat Examples:

1. Using the TAC II Vehicle Cards

Look at the photo of the two cards. You will see that we have a Russian BMP-2 firing a Spandrel missile at a Swedish CV9030. Lets assume that the CV9030 is stationary and is at a range of 2500 meters away.

The BMP-2 card has two sets of weapon data on it, the top set is for the 30mm main gun and it has a grey stripe below it signifying an anti-tank gun. The bottom set of data is for the AT-5 Spandrel and it has a red stripe signifying that it's an ATGM. Since we are firing an ATGM we will be concerned with the bottom row of data.

BMP-2		ROF		Notes															
30mm Autocannon		4																	
PTK 7.62mm Coax		4																	
		Conventional Fire																	
		Round	0-200	250-350	400-1100	1150-1800	1850-2250												
PTK 7.62mm		12	8	4															
M or S	30mm HEAT	0-500	120	550-1000	110	1050-1500	90	1550-2000	70	2050-2250	50	2300-3000	30						
M or S	AT-5 Spandrel	0-70	71-100	170	101-150	170	151-200	170	201-250	170	251-4000	170							
Front/Rear		50	10	99	90	30	90	80	40	70	65	60	30	55	70	10	23	90	10

To fire all we need to do is move across the AT-5 row until we get to the column with the range of 2500 meters (251-4000), look down to the red column on the CV9030 card and see that we have a 90% chance to hit. If the firing player rolls a 90 or less, he hits the target with the missile.

Next we need to figure out if the AT-5 missile penetrates the front of the CV9030. Take the front armor of the CV9030 (50) and subtract it from the penetration factor of the AT-5 (170) and we end up with a 120% chance to penetrate, naturally penetration is automatic for anything over 100%.

Interesting fact about ATGMs. You will notice that most ATGMs have a minimum firing distance, this is the arming distance. In the case of the AT-5 it is anything less than 71 meters. Also you'll notice for the first few hundred meters after the arming distance the chance to hit goes up steadily and quickly until you reach the missiles effective range envelope and then most missiles have a 90% chance of hitting vehicles that are not in defilade within that effective range envelope.

Rule 4: APC Bail-Out

If an armored personnel carrier (APC) is destroyed, the infantry mounted in the vehicle has a chance of surviving. Roll the percentile die. On a roll of 60% or less the infantry survives as a unit and may dismount. Their next movement phase must be spent dismounting. If the APC suffers a catastrophic hit, the chances of survival are reduced to 30% or less.

Section C: Conventional Fire

Rule 1: Firing Procedure



A. General Procedure:

All direct fire weapons have a conventional fire factor which varies according to range. This information is on the vehicle data card in the Conventional Fire read of the front of the card. Direct conventional fire has no effect on armored vehicles except to cause them to button up (see E below). When firing at a non-armored target, total the conventional fire factors of all units firing, locate the correct column of the conventional fire table, and roll the 10 sided die. Modify the result as called for by the target hardness modifiers on the vehicle or weapon's card. The

modified die roll will yield one of four results.

- 1. No Effect:** The target unit is unaffected.
- 2. Suppression Check (SC):** The target unit must take a suppression check. Roll the 10 sided die. If the die roll is equal to or less than the unit's CP rating, it passes and is unaffected by the enemy fire. If the die roll is greater than the unit's CP rating, it is suppressed.
- 3. Kill Check (KC):** The target unit must take a kill check. Roll as for a suppression check. If the unit passes the Kill Check it is suppressed. If it fails the Kill Check it is eliminated.
- 4. Kill (K):** The unit is eliminated.

B. Effects of Suppression:

A suppressed vehicle unit may not fire and on its next movement phase, must move away from the source of fire (or the artillery main point of impact if under indirect fire) which caused the suppression at full speed. They must continue to move away from the source of suppression until they either are no longer suppressed or reach a safe covered position. A move to a safe covered position cannot be used to get closer to the enemy, it must be away from the suppressing unit. Suppressed non-vehicle units may not move or fire. Any unit already suppressed which is called upon to take another suppression check is automatically suppressed again. Suppression effects last for one complete game turn. A suppression marker with the correct phase label is placed by the unit. The correct phase label is the phase in which the unit was suppressed (and also the phase in which suppression effects stop). The suppression marker is removed at the end of the phase indicated.

C. Hidden Effects:

In very small actions, realism can be heightened considerably by not revealing the effects of fire to the firing player. If, for example, an advancing player received missile fire from a woods line and returned fire in the next fire phase, in subsequent fire phases he would know only that the

missile unit did or did not continue firing. Only the owning player would know for certain whether the unit was destroyed, suppressed, or unaffected by the fire. Certain exceptions are made. A catastrophic hit is a rather spectacular event and is obvious to both sides. Likewise units in a close assault or very close to an enemy unit can assess the effects of their fire fairly well. While this rule is fairly easy to implement on a small scale, its use in larger actions is not recommended as it will tend to cause confusion and requires a great deal of bookkeeping, thus slowing play considerably.

D. Pinning Fire:

Units completely under cover are not normally subject to direct fire. Non-armored targets under cover may be subject to pinning fire, however. Pinning fire is defined as fire directed at the area occupied by units under cover to keep them under cover. The fire procedure is identical to normal conventional fire with the target unit treated as if it was not under cover. If the fire results in either a kill or suppression, the target unit is pinned. A pinned unit may move and fire normally except that it may not expose itself in the area where fire was directed. Each pinning attack covers an area 50 meters wide. Once a pin result is achieved, the pin may be sustained by directing the same volume of fire at the area in subsequent fire phases. Additional die rolls are not required. For example, an infantry unit is in a gully. Enemy units fire at the edge of the gully and obtain a suppression result. The infantry unit in the gully may move off down the gully or fire at units which enter the gully. It may not, however, fire over the edge of the gully where the pinning fire was directed. Pinning fire may be directed at an area in which enemy units are suspected but as yet unspotted. For example, a tank company might choose to spray a woods line with machine gun fire while approaching it in the hopes of pinning possible infantry on the edge of the woods. If this option is allowed by the referee, however, it is imperative that the rules on ammunition supply be used. If they are not used the game will rapidly degenerate into armored vehicles constantly spraying every possible point of concealment with their weapons at maximum rate of fire. In reality this would quickly exhaust their supply of ammunition. If this option is used, the first time pinning fire is directed at a point it also serves as recon by fire.

E. Buttoning Up:

An armored vehicle platoon will button up automatically if any of its vehicles is fired on by conventional fire or is in the burst radius of an artillery round. It will remain buttoned up until one complete game turn has passed without such fire being directed at it. For effects of buttoning up see the spotting table.

Rule 2: Infantry Organization and Firepower

Infantry is organized into fire teams and squads. The infantry firepower charts list the conventional fire factors of fire teams and squads at different ranges and with different weapons mixes. In all cases a squad or fire team will be represented by a single based unit containing several figures. The unit will always fire as a single unit at a single target.

The referee should determine at the start of the game which infantry counters are equipped with light machine guns, portable ATGMs or portable anti tank rockets (LAW, RPG, etc) as well as any counters that might have shoulder fired anti-aircraft missiles.

The actual number of figures on an infantry marker is not important but should be somewhere in the range of 4-6.



Rule 3: Heavy Weapons Firepower

Heavy direct fire weapons (such as a tank's main armament) may fire at non armored targets in direct fire. Each weapons card has the direct fire value (Conventional Fire Factors) of the weapon at different ranges and with different ammunition if more than one type is available.

Rule 4: Danger Space

Direct fire conventional weapons (aside from large rounds which explode on impact) can cause hazard to units in their path of fire, either in front of or behind the target. The space which such a weapon threatens is referred to as its danger space. For all machine guns and small arms, the danger space is 750 meters long. For all light cannons (20mm, 23mm) it is 1000 meters long. In all cases the danger space stops when it encounters any obstacle to fire, such as an ascending terrain contour, wall, etc. The danger space is divided into three equal segments (of 250 meters each in the case of machine guns and small arms, of 350 meters each in the case of light cannons). The actual danger space segments are the area immediately in front of the firing unit along the path of fire, the area immediately in front of the target unit along the path of fire, and the area immediately behind the target unit along the path of fire. For example, if a machine gun was firing at a unit 1000 meters away, the danger space would be from the firing unit out 250 meters, and then from 750 meters out to 1750 meters out. All units along the path of fire and in the danger space are attacked. A unit may not fire if a friendly non-armored unit is in its danger space. Units other than the target unit may not be attacked with a factor greater than that applicable to the range the unit is at nor may they be attacked with a factor greater than that used to attack the designated target unit. Using the above example of a machine gun firing at a unit 1000 meters away, assume the firing unit is a US .50 caliber cupola machine gun on an M1 tank. In addition to the designated target at 1000 meters, there is also an intervening unit at 200 meters and an additional target at 1200 meters. The designated target would be fired at with a value of 3 per burst fired as indicated on the weapon card (range 400-1100 meters). The target at 1200 meters would be attacked with a value of 2 (1150-1800 meters range). The target at 200 meters would be attacked with a value of 3, because even though the listed value of the .50 caliber at a range of 200 meters is 6, the unit cannot be attacked with a value greater than that used against the designated target. In cases where the designated target is so close to the firing unit that there is an overlap of the parts of the danger space, the danger space is considered to be its full length, even if this carries it further than one third of its length past the target unit. Thus, a machine gun firing at a unit 300 meters away would have a danger space of 750 meters out along the path of fire.

Rule 5: Close Assault

All non-armored units may be close assaulted. Under some circumstances, armored units may also be close assaulted. Close assault may only occur when the bases of two hostile units come into contact.

A. General Restrictions:

Specific procedures for assaulting various types of units are listed below. The following general restrictions apply in all types of close assaults described.

1. All close assaults take place during the fire phase after all other fires have been resolved.
2. No unit may conduct more than one close assault per fire phase.
3. No unit may be assaulted more than once per fire phase.
4. Only the phasing player may conduct assaults during a fire phase.
5. An assaulting infantry-type unit may not conduct a normal attack during the fire phase in which it conducts a close assault. Vehicle units may fire in the phase in which they conduct a drive-through (see D below) but only at the unit being driven through and always as moving fire (never as a short halt, regardless of how short the actual movement is).
6. A unit being assaulted may fire in the fire phase it is assaulted if normally able to do so, but may only fire at the unit assaulting it and may never fire with a rate of fire greater than 1.
7. A unit, which has been assaulted in a fire phase, may not move in its own immediately

following movement phase.

8. No direct fire may be directed at any unit of the non - phasing player within 100 meters of a unit conducting a close assault.

B. Assaulting Non-Armored Units:

If any unit moves into contact with a non-armored unit which is already suppressed, the suppressed unit is eliminated. Only infantry-type units (infantry, engineers, paratroopers, commandoes, etc.) may close assault non-suppressed enemy units. Non-suppressed non-armored enemy units other than infantry (such as trucks, towed artillery, etc.) which are close assaulted by infantry are automatically eliminated. If infantry close assaults other infantry, the following procedure is used.

1. All units which are close assaulting a single defending unit add their close assault factors together. A unit's close assault factor is its base firepower at the shortest range shown on the infantry firepower chart. To this number the assaulting player adds the average CP rating of all the assaulting units (rounding fractions to the nearest whole number). The assaulting player finally rolls a die and adds this to the above.
2. The defender repeats the above process, but only counts the close assault factor and CP rating of the single defending unit.
3. Whichever player has the higher total wins. The other player's unit is eliminated. If the attacker loses, and is attacking with more than one unit, only one unit of the defender's choice is removed. In the event of a tie, both sides lose a unit.

C. Assaulting Armored Units:

Close assaults against armored vehicles are conducted with antitank grenades using the following procedure.

1. Roll the 10 sided die and subtract the target hardness modifier listed on the target vehicle data card. The target vehicle is destroyed on a modified roll of 2 or higher. Thus, if a Russian squad assaulted a U.S. M60A1 and rolled an 8, the modified die roll would be 2, resulting in the destruction of the tank.
2. All general restrictions listed in A above are in effect except that if the infantry is unsuccessful in their attempt, the enemy armored vehicle may move in its next movement phase.

D. Drive-Through:

Although armored vehicles may not normally close assault non-suppressed enemy units, they may execute a drive-through (sometimes called an overrun). If an armored vehicle is able to pass through a non-armored unit during its movement phase, the enemy unit driven through receives an automatic suppression check. This suppression check is resolved in the movement phase and does not prejudice its vulnerability to other suppression checks from fire in the fire phase. If the driven-through unit fails this suppression check and the armored vehicle unit is still touching its stand at the end of movement, the armored vehicle automatically close assaults it and eliminates it (as specified in first sentence of 8 above). If the non-armored unit fails any suppression check during the fire phase, the armored vehicle is not destroyed or suppressed during the fire phase, and the armored vehicle is still touching the unit's stand at the end of the fire phase, the unit is also eliminated.

Section D: Doctrine and Special Vehicles

Rule 1: Sagger Watch

Only the U.S. player may employ sagger watch. One vehicle in each armored vehicle platoon may be designated as the sagger watch vehicle. Sagger watch vehicles have an advantage in spotting ATGMs as outlined in Part 2, Section B, Rule 3, ATGMs. In addition, sagger watch vehicles obey the following rules.

A. Immediate Return Fire:

If a sagger watch vehicle spots a previously unspotted ATGM launcher during a fire phase as a result of it firing an ATGM, the sagger watch vehicle may fire on the launcher (or launch vehicle) in that fire phase. If the launcher is destroyed or suppressed, the missile automatically misses. All sagger watch fire at targets spotted in the same fire phase is conducted during the part of the fire phase reserved for subsequent rounds (i.e. after all other units have fired their first round).

B. Target Priority:

Sagger watch vehicles may fire only at ATGM launchers or launch vehicles which are firing or have fired at the platoon to which the sagger watch vehicle belongs.

C. Changes in Status:

Vehicles may be changed to or from sagger watch status at the beginning of each friendly movement phase.

Rule 2: Overwatch

Only the U.S. player may employ overwatch. A unit may be designated as being on overwatch in either of the following two cases.

1. A platoon may be placed on overwatch for the rest of its company or team.
2. A single vehicle or tank section may be placed on overwatch for the rest of its platoon.

A unit may be placed on overwatch only at the conclusion of a friendly movement phase, and then only if the unit is in communication with its immediate headquarters and has been stationary for the entire movement phase. Units on overwatch must remain stationary for the entire time they are on overwatch. Overwatching units have an advantage in spotting in-flight ATGMs as outlined in Part 2, Section B, Rule 3, ATGMs. In addition, an overwatching unit may attempt during the fire phase to spot any enemy unit which fires at any of the units it is overwatching; if successful, it may fire on them in the same fire phase they are spotted. Such fire is conducted in the part of the fire phase reserved for subsequent rounds.

Rule 3: Soviet Platoon Fire (Cold War Era)

All Russian tanks are subject to platoon fire doctrine. That is, all tanks of a platoon which fire in a fire phase with their main armament must fire at the same target. No tank in a platoon may fire from a short halt or from a stationary position unless all vehicles in the platoon are conducting a short halt or a stationary.

Rule 4: Vehicles With Stabilized Guns

Most modern tanks have stabilized guns. The referee should designate these vehicles on the player record sheet or simply inform the players which of their vehicles have stabilized guns. All of these vehicles have advanced forms of gun stabilization, which allow more accurate fire while moving. To represent this, vehicles with stabilized guns may fire their main guns while moving as if stationary.

Rule 5: Russian ATGM Vehicles

Russian BRDMs equipped as launch vehicles for either the AT-2 Swatter or AT-3 Sagger are capable of parking in full vehicle cover and launching their missiles. The missile is guided to the target by a dismantled gunner stationed at a point of vantage, generally within about 50 meters of the launch vehicle. To simulate this, the Russian player may designate a BRDM launch vehicle to have dismantled its



gunner. The vehicle must be stationary for an entire movement phase to do so and may not fire in the immediately following fire phase. The gunner must be within 50 meters of the launch vehicle and must be able to see any target fired at. The vehicle itself does not have to be able to see the target and may be completely covered from view behind a crest line. The gunner is treated as infantry under light cover for spotting and fire purposes. Once the gunner has been killed, the vehicle may no longer launch missiles, but remains intact for other purposes.

Part 3: Indirect Fire

Section A: Basics

Rule 1: Movement and Deployment

Artillery units move as vehicles, either with the movement allowance printed on the vehicle side of the data card of a self-propelled gun or with the movement allowance of the vehicle towing a towed gun. Artillery units are subject to set-up times as listed on the weapon's data card. This is the length of time (expressed in complete game turns) that it takes artillery to go from a traveling mode to firing positions, and vice versa. Artillery units may neither move nor fire while setting up.



A. Self-Propelled Artillery:

Self-propelled artillery capable of engaging in direct fire may do so without setting up. Units which do so may only fire when stationary and always do so with a rate of fire of 1. In an emergency, a self-propelled artillery unit may move out of a firing position without spending the normal time required to go from firing to movement configuration. If it does so the unit must spend twice its set-up time when it next deploys to fire and has its CP rating reduced by 2.

B. Hip Shots:

Artillery units may execute a hip shot by going rapidly from traveling mode to firing positions. Total set-up time is one friendly movement phase and fire phase, instead of the listed set-up time. All rounds fired are considered to be from inaccurate guns, and weapons executing a hip shot may fire only at the sustained ROF. At any time after conducting a hip shot, the firing unit may take time to finish setting up. This time must be equal to the entire time listed for set-up.

Some direct fire weapons (notably air defense guns) also have a listed set-up time. These units may not exercise the hip shot option.

Rule 2: Artillery Observation

Artillery fire (with the exception of off-board counter fire, (Part 3, Sec B, Rule 5C) must be requested by an individual represented by or contained in one of the units on the board. There are two types of observers: trained and untrained. Whether an observer is trained or untrained affects the length of delay between when a mission is called and when it is fired and the type of adjustments in a mission that may be made, as explained in subsequent rules. Although the categories are labeled in terms of training, the nature of the communications net available to the observer is equally important and thus personnel trained as artillery observers may under some circumstances be treated as untrained observers.



A. U.S. Observers.

1. Trained Observers:

Each artillery battery has three forward observers (FOs), generally assigned one each to the maneuver companies or teams which it is supporting. A dedicated battery (see Part 3, Sec E, Rule 1) assigns all three observers to the company or team to which it is dedicated. The FOs of an artillery battery should be represented by separate stands and /or vehicles (generally a jeep). A heavy mortar platoon (of a battalion's combat support company) assigns one FO to each maneuver company of the battalion. As these are permanently assigned they should be considered to be integral to the stand representing the company headquarters. Each medium mortar platoon (of a rifle company) assigns one FO to each rifle platoon. Since these are also permanently assigned, each stand representing a platoon's headquarters group is considered to have a medium mortar platoon FO integral. Each forward observer is a trained observer for his own unit for all purposes. Each FO is a trained observer for calling and adjusting fire, but untrained for purposes of determining reaction times, when requesting fire from other than his own unit.

2. Untrained Observers:

All other personnel with access to a radio or field telephone may serve as untrained observers.

B. Opfor Observers.

1. Trained Observers:

Each artillery unit of battery size and larger has a COP (command observation post). Each COP serves as a trained observer for its unit. No COP may request or adjust fire from artillery units other than its own. The COP may be designated at the beginning of the game as being in either of the following two configurations.

a. Fixed: If the Opfor player begins with units deployed on the board, he may designate any COPs as fixed. The personnel of the COP are placed (dismounted) at the COP location. They are considered entrenched, and function as trained observers for all purposes.

b. Mobile: All non-fixed COPs are mobile and are carried in their own vehicles. Mobile COPs function as trained observers for calling and adjusting fires, but as untrained for determining response times. A mobile COP must be stationary to call fire.

2. Untrained Observers:

All Russian and Opfor commanders of units of company size or larger are considered untrained observers for all purposes. Personnel below this level may not request or adjust fire due to strict radio procedures. If a company commander is eliminated one of the platoon leaders may be designated acting company commander and thus call and adjust fire. If no platoon leaders survive, no such commander may be designated.

Rule 3: Mean Point of Impact

Reference will be made throughout the indirect fire rules to the mean point of impact (MPI). The MPI is an abstract point representing the averaged location of the impact points of a volley of rounds fired at a target. If only one round is fired, its impact point is the MPI. If several rounds are fired, they will cluster around the MPI as determined by the pattern of the firing sheaf (see Part 3, Section A, Rule 5, Firing Sheaf).

Rule 4: Deviation

A. General Procedure:

The MPI of indirect fire is usually subject to deviation. Deviation is determined by rolling a die and consulting one of the deviation tables. There are three deviation tables: *slight deviation*, *normal deviation*, and *major deviation*. Which table is used depends upon the type of mission fired and whether

the guns are registered (see Part 3, Section A, Rule 7), as summarized in the chart below. When rolling for deviation, the die is rolled once for slight deviation; it is rolled twice for normal and major deviation, once each for lateral and longitudinal deviation. The MPI is then moved in the direction and by the distance indicated. *Lateral deviation* is in a direction parallel to the firing side's baseline (the edge of the board or table in the direction of friendly territory). *Longitudinal deviation* is perpendicular to the baseline.

<i>Mission</i>	<i>Registered</i>	<i>Unregistered</i>
Planned Fire*	slight	normal
FPF*	slight	normal
Opportunity Fire	normal	major
Adjust	slight	slight
Subsequent Rounds	slight	slight

*Applies only to first round or salvo of a fire mission. Thereafter, see subsequent round explanation following.

B. Subsequent Rounds:

Once a fire mission has been called for and adjusted to the firing player's satisfaction, rounds will deviate only slightly if at all. Each fire phase that rounds come in roll for slight deviation and displace the MPI accordingly. Unlike other deviations, this does not change the original (i.e. intended) MPI. Each subsequent fire phase the MPI will deviate from the original MPI (as located after adjustment was completed), not from the last phase's MPI. In other words, rounds will scatter to some extent around the aiming point, but will not wander across the field.

An exception to this is found in towed mortars. Towed mortars are deployed with the base plate resting on open ground and as subsequent rounds are fired the mortar will drive the base plate deeper into the ground, thus changing the lay of the weapon. For towed mortars, subsequent rounds deviate from the MPI of the last phase, not the original aiming point, and thus can wander considerably off target over time.

C. Additional Sources of Deviation.

1. Untrained Observers:

An untrained observer is generally unfamiliar with calling and adjustment procedures, and quite often is unable to read a map. To take this into account, if any deviation is rolled (other than an "on target" result) on an opportunity fire or an adjust mission, add 100 meters to it.

2. Weapons Accuracy:

Due to design factors, some indirect fire weapons are inherently more accurate than others, while some are notoriously inaccurate. Some weapons cards contain the notation "*accurate*" while others contain the notation "*inaccurate*." Accurate weapons subtract 100 meters from the rolled deviation (with an adjusted deviation of less than or equal to zero being on target). Inaccurate weapons add 100 meters to the rolled deviation (with an "on target" result being unchanged). An inaccurate U.S. weapon is additionally subject to random alteration of the firing sheaf as explained in rule Part 3, Section A, Rule 5 for Opfor units. When randomly adjusting fire sheaves for inaccurate weapons for either side, add 100 meters to the deviation of each round.

Rule 5: Firing Sheaf

A. General Explanation:

The fire sheaf is the pattern of individual rounds fired by a unit as they fall around the MPI. The sheaf should be marked on a sheet of paper with one dot per firing weapon in the battery. The exact center of the sheet is the MPI. The sheaf must be recorded before the mission is fired, and may not be changed until a new target is fired at or a new mission is given.

B. U.S. / NATO Procedure:

The U.S. player, before the fire mission, specifies his artillery sheaf by marking the shell impact points as described above. For howitzers and guns, any pattern desired may be marked on the sheet, so long as the MPI does indeed represent the approximate center of the sheaf. For mortars, the firing sheaf is always the same as the relative position of the firing mortars. That is, if the mortars are deployed in a pattern, the rounds will fall in an equivalent pattern. When the sheaf is marked and the rounds arrive, the sheaf is laid over the impact area with the bottom edge of the sheet parallel to the player's table baseline.

C. Opfor/Russian Procedure:

The Russians do not follow the same meticulous procedure for aligning guns in the battery position as do U.S. artillery units, and as a result slightly different procedures are used. Since a Russian battery will deploy in a simple line of metal parallel to the FEOT line, a Russian battery sheaf will always be a straight line parallel to the Russian table edge baseline. Unlike a U.S. sheaf, however, the sheaf recorded by the Russian player represents his intended sheaf, not the actual sheaf. Since less attention is paid to the actual precise alignment of guns in battery, the referee takes the Russian sheaf pattern and rolls once on the slight deviation table for each round, displacing the impact point accordingly. The new positions on the sheaf are the true sheaf pattern, and this sheaf pattern remains in effect until the firing unit changes target, moves, or requests a new sheaf pattern, at which time the sheaf randomization procedure is repeated.

Rule 6: Rates of Fire

Each indirect fire weapon card has printed on it a rate of fire (ROF) which consists of five numbers. The first three numbers define the *maximum ROF*. Of these, the first number indicates the number of rounds that can be fired in a fire phase. The second number indicates how often that number of rounds may be fired. The third number indicates the length of time in minutes (complete game turns) that the maximum ROF can be maintained. For example, an ROF of 1/2(2) indicates that the weapon can fire one round every second fire phase for two complete game turns. An ROF of 3/1 (3) indicates that the weapon can fire three rounds every fire phase for three complete game turns.

Under the three numbers describing the maximum ROF are two numbers describing the *sustained ROF*. The first of these indicates how many rounds may be fired per fire phase. The second indicates how often that number of rounds may be fired. For example, the U.S. M 109 self-propelled 155mm howitzer has a complete ROF listing of 2/1(3), 1/2. Decoded this means that the weapon may fire two rounds each fire phase at its maximum rate of fire for three complete game turns, and may then continue to fire one round every other phase at its sustained rate of fire. A weapon may fire at its sustained ROF indefinitely. Some weapons have no maximum ROF, only a sustained ROF. Their ROFs are marked "sust."

If a weapon is capable of firing more than one round per fire phase, treat each weapon as firing once for purposes of marking the firing sheaf with impact points, but multiply the effectiveness of each impact point by the number of rounds fired by the weapon that phase. Higher rates of fire are only used in target suppression or destruction-missions, and thus each round will have an expressed combat effectiveness (see Part 3, Sec C: Effects of Fire).

Whenever a player requests more than one round per gun in a fire mission, they will be delivered at the maximum ROF unless the firing unit is no longer capable of maximum ROF (due to already having fired for the specified maximum ROF period). Otherwise, rounds are delivered at the sustained ROF.

Guns which have fired at the maximum ROF may be cooled (and crews rested) by not firing them. Guns

which are not fired for ten game turns regain the ability to fire at their maximum ROF.

Rule 7: Registration

A. General Explanation:

When artillery has been in position for some time it will have the opportunity to register its guns. Precision registration consists of firing one gun from the battery at a prominent geographic feature and successively correcting fire until rounds can repeatedly be delivered on target. The battery will have general information about local weather conditions, elevations, etc., but there are always factors at work in an area which influence ballistics and which cannot be precisely measured in advance. Precision registration provides a nearly exact set of correction formulae to allow accurate placement of fire by the battery on any point in its immediate area.

Registration generally takes a good deal of time. Due to the presence of counter battery radar, a unit will seldom if ever register fire from the battery position in a combat environment. The general procedure is to send one gun or gun platoon to a position remote from the battery and register fire from there. This allows the battery to make a close approximation of the correct formula for its own position. Following registration, the detached element rejoins the battery. Since some time is required for this process (more than most games will cover) the referee should indicate at the start of a game which batteries are registered. Any battery which is registered at the start of a game and which moves to a different location is no longer registered.

B. Game Effects:

Guns which are registered are more accurate than those which are not, and are subject to reduced deviation. See Part 3, Section A, Rule 4, Deviation.

Section B: Fire Missions

Rule 1: Planned Fire

A. General Description:

Before the scenario begins, each player may designate a number of planned fire target points. Each such point represents a target for which the supporting artillery has already identified and calculated firing data. Each side may designate up to two planned fire target points per grid square on the map. These are marked on the player's map and numbered (consecutively from one is sufficient).

B. Eligible Target Points:

Each planned fire target point is generally a prominent geographic feature. Since it is necessary both for the observer to know when the enemy is in the target area and for the firing artillery to know where the target is, a planned fire target point must be a feature which is identifiable both on a map and by the naked eye. Lone buildings, road intersections, gullies, centers of villages, small groves, tree lines, and ridge crests are all examples of terrain features which meet this criterion. A contour line is not such an example for although it shows up on a map, it is not readily identifiable with the naked eye.

If a battery is registered, it is possible to have planned fire target points which are not prominent geographic features. Before contact is made with the enemy, a unit stationed in the area would have the artillery fire a concentration on a target point and would then mark the point on the observer's map. This option is only available to a defending force, and only observers initially stationed on the playing area would be capable of requesting these planned fires.

C. Calling the Fire Mission:

Requests for a planned fire mission should be written down and handed to the referee, who will consult the artillery response table and note on his turn record when the first round or salvo will arrive. The request should include the target number, the size of the artillery unit assigned, the number of rounds requested per gun, and the type of ammunition to be fired. An example of a planned fire request would be: "Fire mission: battery, 2 rounds HE, target 5." As a result of this request, the battery would deliver two rounds of high explosive per gun on planned fire target number 5, the second round following the first at maximum ROF.

Planned fire is more responsive than unplanned opportunity fire and as a result will be delivered more rapidly, as indicated on the artillery response table.

Rule 2: Opportunity Fire

Opportunity fire is the attempt to engage a target of opportunity whose location has not been previously plotted. The observer writes a fire order and gives it to the referee. The fire order must contain the following information:

1. Range estimate (the distance in scale meters from the baseline of the table to the target).
2. Deflection (the distance in scale meters from the right side of the table, with right determined by standing at the friendly baseline of the table and facing the enemy).
3. Size of unit to fire the mission (gun, platoon, battery, etc.)
4. Number of rounds to be fired per gun .
5. Type of ammunition to be fired.

A typical opportunity fire order would be: "Fire mission : out 1300, left 500, battery, one round HE."

The referee determines the response time and notes on the turn record when the round or rounds will arrive. When they arrive he determines where they will fall by measuring the target point specified in the order and conducting deviation. Generally the owning player will then attempt to adjust the rounds onto target.

Rule 3: Adjust

A. General Procedure:

Quite often the first round of a mission will not fall where desired and it will be necessary to adjust subsequent rounds onto the target. In doing so the following steps are followed.

1. The firing player turns his back on the board. The referee determines where the rounds hit and places a marker there to so indicate.
2. The player turns around. The referee announces, "Ten seconds to adjust." The player has, from that time, ten seconds to write his adjustment order. If the player does not finish in ten seconds, no adjustment order is dispatched until the next fire phase. If the firing unit has no ordered fire mission beyond the round or rounds fired; it will cease firing. Otherwise it will continue to fire as initially instructed. Adjustment orders may take the form of a correction order or a check firing order.

B. Corrections:

Trained observers may make both a lateral and a longitudinal correction in any one adjust order. Trained observers may preface their correction with the word "battery" or any other size unit, which will cause that unit to fire all of its weapons on the corrected target point, using it as the MPI of the unit's sheaf. Otherwise, only one gun will fire the adjustment. Untrained observers always correct with one gun firing and must wait until the artillery has been corrected onto the target to give a standard request for fire on that point without a correction order in it. Additionally, untrained observers may give only a latitudinal or a longitudinal correction, not both.

A typical trained observer's correction order might read as follows: "Battery, add 100, left 50."

An untrained observer's correction order would be as simple as: "Drop 200."

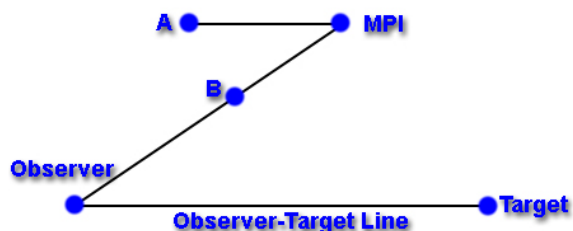
All corrections are made in relationship to the *observer-target line*. This is a line connecting the position occupied by the observer and the target. All lateral (left right) corrections are made perpendicular to this line while all longitudinal (drop-add) corrections are made parallel to this line. It is important to remember that a "drop" correction will not move the MPI directly toward the observer unless the MPI lies

exactly on the observer-target line.

Example :

A correction of "Drop 200" will move the MPI to A, not B.

The next (adjusted) round arrives one complete game turn after the correction order is submitted, regardless of the ROF of the firing weapon.



C. Check Firing:

Instead of a correction, an observer may simply order "Check Firing." The firing unit ceases fire immediately and no further rounds arrive. Check firing is generally used to lift fire from an area friendly troops will soon enter, or stop fire inadvertently directed on friendly positions. A check firing order need not be written and can be given verbally to the referee.

D. Blind Fire:

If a round falls where the observer cannot see it (behind a high hill or in a smoke screen, for example) the referee should not place a marker on the table for the round. During the ten seconds time to write adjustments it is up to the player to figure out what has happened and react accordingly.

E. Observer Location:

The referee should not conduct adjustments in such a way as to expose a heretofore hidden observer. It may prove necessary to have both sides turn away from the table for the short amount of time required to conduct the correction.

Rule 4: Final Protective Fire

A. Explanation:

Artillery doctrine calls for the assignment of a final protective fire (FPF) mission to selected indirect fire units. A final protective fire is a preplanned mission, with a predetermined sheaf, which is the firing unit's highest priority mission. The FPF is generally placed to cover a likely route of approach which is of extreme importance or which cannot be swept adequately by direct fire weapons. Whenever a unit which is assigned an FPF mission is not engaged in another fire mission, it will lay its weapons on the FPF target line and be ready to execute the command, "Fire the final protective fire."

B. Which Units May Be Assigned a Final Protective Fire:

Each separate unit up to battery size may be assigned an FPF mission. A mortar platoon of an infantry company would be assigned such a mission since it is a separate indirect fire unit (a platoon not part of a larger indirect fire unit), but a gun platoon of a battery would not. Rather, the battery as a whole would be assigned a single FPF. All units of battery size are considered separate for this rule. Dedicated batteries (see rule 111 - E-1) may not be assigned an FPF mission, nor may any indirect fire weapon larger than a 155mm gun or howitzer.

C. Assigning the Mission:

At the beginning of the scenario the defending player must plot his final protective fires if the scenario calls for his troops to begin deployed on the table. Each unit which is registered may have an FPF mission plotted anywhere on the board. Each unit which is not registered may have an FPF plotted that meets all of the requirements of a planned fire target.

The firing sheaf of an FPF will always be a straight line. The player plotting the FPF mission should draw the line on his map (to show its orientation to the surrounding geography) and mark it with a letter. On a separate piece of paper the player notes the exact length of the line in inches, which indirect fire unit is responsible for the FPF mission, and who is authorized to call the FPF. Each indirect fire unit eligible to

fire an FPF may only be assigned one such mission.

D. Authorization to Call the Mission:

Unlike other fire missions, only one person is authorized to call the FPF. In U.S. units the commander of the maneuver company /team engaged is so authorized, but he may delegate this authority to a specified platoon leader or forward observer if that proves more convenient. No one person may call more than one FPF. Thus, if three FPF missions were allocated to a company's sector, at least two should be delegated to platoon leaders and /or forward observers. Authorization to call the FPF in Russian/Opfor units rests with the battery commander (at the command observation post) of the unit firing the FPF, and the commander must be in a position to observe the target point when calling the mission.

E. Calling the Mission:

At any time a player may call the FPF if the person authorized to do so is still able to do so. If the stand or vehicle containing the person authorized to call the mission has been eliminated, is out of communication, or is routing, the mission may not be called. To call the FPF give the referee a written order containing the notation FPF followed by the letter code of the FPF desired.

F. Response Time:

The referee must determine whether the indirect fire unit firing the FPF is currently engaged in firing another mission. If it is not so engaged the FPF will be delivered in the time shown on the indirect fire response table. If the unit is engaged the FPF after twice the time shown on the response table.

G. Fire procedure:

The referee will check the orientation and length of the FPF line and distribute the sheaf along that line, evenly spacing the individual shots. The referee will next determine deviation, if any, by consulting the deviation chart.

Once the FPF order is given, the firing unit will fire at maximum ROF as long as it is capable of so doing and thereafter fire at the sustained ROF until one of two things happens.

1. The person authorized to call the FPF orders the unit to cease firing.
2. The unit firing the FPF exhausts its ammunition.

Obviously, if the person authorized to call the FPF becomes incapacitated after calling it, the FPF will continue until the firing unit exhausts its ammunition. Unless playing with the optional ammunition rules this will be for the remainder of the game. All FPF missions are conducted using HE ammunition. Exhaustion of the HE ammunition is sufficient to warrant suspension of the FPF.

Rule 5: Counterfire

Counterfire (or counterbattery fire) is the attempt to silence the enemy's in direct fire weapons. Since both sides will have artillery off-board, much of the counterfire procedure will not directly affect the playing area.

A. Target Acquisition:

There are five means of acquiring targets for counterfire: direct observation, counterbattery radar, aerial observation, sound ranging, and flash ranging.

1. Direct Observation: Direct observation of a counterfire target is handled in the same manner as other spotting and is conducted as a normal on-board fire mission.
2. Counterbattery Radar: If a player has counterbattery radar available he may use it to locate an enemy indirect fire weapon. The scenario will specify whether counterbattery radar is available and whether it is assigned or on call. If it is assigned, it is assumed to be sweeping the area of the playing table and ready to locate any weapon firing in the area. If it is on call, it may not begin to locate a target until a weapon has fired at a friendly unit and the authorization to use it has been granted. Request and authorization are discussed in the background information booklet.

Once counterbattery radar is in use it will locate an enemy gun or howitzer after two rounds have been fired and will locate an enemy mortar or rocket launcher after one round or salvo has been fired. Accuracy of the location is dependent on the accuracy of the counterbattery radar used. The accuracy and range of counter battery radar are printed on the radar and sensor data chart.

3. Aerial Observation: Aerial observation of on-board targets is treated as normal spotting. Aerial observation of off-board targets is explained in the section of the rules dealing with tactical aircraft.

4. Sound Ranging: The scenario will indicate whether a sound ranging platoon is available to a player. If so, the platoon will be used to locate enemy indirect fire weapons. The range and accuracy of sound ranging are listed on the radar and sensor data chart. The listed range and accuracy is that for sound ranging on a clear day. In conditions of high winds and /or inclement weather, the range of sound ranging is halved.

Sound ranging units are unable to locate with accuracy weapons which fire at the same time and from the same general location as a large number of other weapons. For example, the Russian/Opfor player locates three artillery batteries within one kilometer of each other and all three fire at the same time. Sound ranging would be unable to determine more than the general location of the entire artillery concentration. Referee judgment is required in making this determination. A sound platoon will not generally be confused by multiple firing batteries of radically different types as the frequencies of their sounds are sufficiently different to allow separation of the sound sources.

5. Flash Ranging: The scenario will indicate whether a player has available a flash ranging platoon. If so, the platoon may be used to locate enemy indirect fire weapons. The range and accuracy of flash ranging are listed on the radar and sensor data chart. To be effective, a flash ranging post must have a clear line of sight to the firing unit. An intervening hill, woods, or other barrier to sight will prevent flash ranging from being effective. Flash ranging is effective to the limits of visibility, as affected by weather.

At night, flash ranging becomes considerably more effective. Ranges increase as noted on the data chart and a direct line of sight is no longer required. A firing unit may still be located even if behind a raised obstruction.

B. On-Board Counterfire:

An indirect fire weapon located on-board by direct observation is treated as a normal target subject either to planned fire or opportunity fire (depending on its location). An indirect fire weapon located on board by other means of target acquisition is subject to the counterfire mission.

1. The player initiating counterfire delivers the request to the referee. The request should state which units are firing, how many rounds are requested, and what type of ammunition is to be fired. For example, "Batteries A and 8, 3 rounds HE on located 120mm mortar battery." The player must also include his firing sheaf.

2. The referee determines the location error of the target acquisition means used. Roll the decimal die and consult the counterbattery error table. Make any modifications to the die roll as called for by the radar and sensor data chart for the type of acquisition asset used. The result of the roll indicates the deviation in inches of the MPI from the center of the enemy unit. If there is a deviation, the die is rolled again and the second column of the chart consulted to indicate the direction of the error. The MPI is moved the distance and direction indicated and the mission resolved.

3. Following this, the mission is fired as if it was a planned fire mission, using the adjusted location of the MPI from step 2 above as the plotted target point. Additional deviation from this point is possible, as in a planned fire mission. If multiple batteries are used, only one fire sheaf is made, with the effectiveness of each impact point multiplied by the number of rounds fired. For

example, if three batteries of U.S. 155mm howitzers fired at a target and were capable of maximum ROF at the time, each impact point's effectiveness would be multiplied by 9 (each howitzer fires three times, with three howitzers firing at each impact point).

C. Off-Board Counterfire:

1. The player initiating counterfire delivers the fire request to the referee in the same manner as for on-board counterfire. The player, however, does not draw his sheaf but instead notes either "converged sheaf" or "normal sheaf" on the written fire order.
2. The referee determines the location error of the target acquisition means used. Roll the decimal die and make any modifications to the die as called for by the radar and sensor data chart. Divide the resulting modified die roll by three, rounding all fractions to the nearest integer. The result is the modified error number used in step 3 below.
3. The fire is resolved on the off-board counterfire table. Using either the converged sheaf or normal sheaf columns of the table, depending on the choice of the firing player, roll a die, and subtract the modified error number (if the number is negative this will result in a positive modifier), and add the target dispersion modifiers on the target's data card. The resulting number on the table is the number of hits achieved on the target. For each hit, roll on the conventional fire combat results table to determine its effect. The column used is determined by the effectiveness of each impact point in the barrage. The effectiveness of each impact point is determined exactly the same as in on-board counterfire. The die roll on the conventional fire combat results table is modified by the target hardness modifier on the target data card. Each such hit is applied against one of the weapons of the target unit. If more hits are inflicted than there are target weapons, multiple hits are applied against individual weapons.
4. If the target is an MRL battery with reload rounds stored at the site, a single hit destroys the entire battery (see Part 3, Section C, Rule 5).

D. Flat Trajectory Guns:

Certain artillery pieces are flat trajectory guns. These weapons cannot fire at targets (such as mortars or howitzers) which are directly behind a hill. Whether such a target meets this criterion will be determined by the referee by examining the small maps of off-board territory (see Part 3, Section D, Rule 1, Placement of Off-Board Artillery). As a general rule, the target must be closer to the base of the hill than the hill's height to be protected from flat trajectory guns.

Rule 6: Special Mission Orders

There are two special mission orders which may be given to artillery : repeat and fire for effect.

A. Repeat:

At the conclusion of any fire mission, the observer who requested the mission, whether trained or untrained, may request a repeat. All that is necessary is to give the repeat order to the referee. The firing unit will then repeat the fire mission on the same target. For instance, if an observer requested a battery to fire three rounds at a target and then requested a repeat, the battery would deliver three more rounds. There is a delay of one fire phase between a repeat order and the arrival of the rounds.

B. Fire For Effect:

Only trained observers may order fire for effect. Fire for effect, for the purposes of these rules, represents an anticipation of the need to adjust fire onto a target. The observer would, when requesting fire, specify the complete fire mission (size of unit, number of rounds per gun, type of ammunition) and then request the adjusting fire from perhaps fewer guns and with different ammunition. Only the adjusting gun or guns would fire the adjustment mission until the observer gave the order "Fire for effect," at which time the entire unit originally specified would execute the fire mission as originally ordered. Fire for effect may be ordered at the same time as a final correction order or after the observer is satisfied that the rounds are falling on target. As an example of the initial fire request in anticipation of a fire for effect order, the observer might write, "Fire mission: battery, six rounds ICM. Adjust with one gun, one round HE, out 1300, left 400." After several rounds were fired and adjusted, the observer might write, "Drop 50, fire for effect."

Section C: Effects of Fire

Rule 1: High Explosive (HE)

HE is the normal round fired by artillery for suppression or target destruction. Each weapon card lists the combat effectiveness and effect radius of a single HE round of that size. When an HE round impacts, determine which enemy units are affected by the round. (If any part of the target unit's stand is in the effect radius, it is affected.) Each such unit is attacked by the round on the conventional fire table. If the target is being attacked by more than one round, combine the combat effect ratings of all such rounds and use the appropriate column of the conventional fire table to resolve them as one attack. Roll a die and modify it by the appropriate target hardness modifiers. Implement the result called for exactly as explained in the conventional fire rules.

Since most HE rounds are fused for air burst, personnel without overhead protection, such as in an open-topped APC or in an entrenchment, are treated as if they are in the open.

Rule 2: Improved Conventional Munitions (ICM)

ICM rounds engage targets by detonating at a high altitude, discharging a large number of grenades which strike the ground, bounce, and detonate at or near chest level. ICM is extremely effective against soft targets, but is not effective against hard targets. To cover the effects of ICM, resolve each round exactly as HE (using the ICM radius and effectiveness rating) but triple the target hardness modifiers used. That is, a modifier of +2 becomes +6 while a modifier of -1 becomes -3. ICM has no effect against targets surrounded by water.

Russian/Opfor artillery units do not have an ICM round available. Additionally, and for reasons unknown to the author, ICM rounds have not been issued to U.S. Marine Corps units. Thus, marine howitzers listed as capable of firing ICM (the 155mm and the 203mm) do not in fact have this round available.

Rule 3: Smoke

Smoke missions are used to obscure enemy vision. Two types of ammunition are available for a smoke mission: WP and HC. WP rounds will build a smoke screen faster than will HC rounds, but HC rounds burn longer. Identical procedures are used for determining their use.

A. Procedure:

Smoke rounds may be fired as planned fire or opportunity fire using the MPI location techniques described previously. When a smoke round is delivered, the referee marks the impact point on the board with a marker. This marker should have printed on it the phase in which smoke will be built. The smoke tables on the data card of the firing weapon indicate how long it takes to build smoke from a particular round, expressed in fire phases. For example, the U.S. 155mm howitzer firing an HC round takes 4 fire phases, or two complete game turns, to build. If the round arrives in the Opfor fire phase of the second turn, smoke will appear in the Opfor fire phase of the fourth turn. Once smoke has built, place a smoke marker at the impact point and a second smoke marker adjacent to it and directly down wind. This is the initial smoke screen. Each subsequent fire phase, additional smoke markers will be added to or subtracted from the screen.

In the *smoke* section of the weapon's data card, in addition to build times, there is also a listed burn time (in fire phases), maximum length (in markers), and add/remove figures for the round's smoke screen at different wind velocities. The *burn time* is the number of fire phases after smoke has built that the smoke screen will continue to grow. The *add* figure is the number of smoke markers added to the screen per fire phase while the round is still burning. The *remove* figures indicate the number of smoke markers removed from the screen each fire phase after the round has stopped burning. All markers are added directly down wind from the last added markers. All markers which are removed are taken from the up wind end of the screen.

The maximum length listed on the card is the longest that the screen may be in terms of markers. Additional rounds delivered onto the same target are, for simplicity's sake, not treated as new screens but rather prolong the burn time of the already present screen. However, even if the burn time is so prolonged, the screen may never be longer than its specified maximum length.

B. Example:

A U.S. 155mm howitzer fires an HC smoke round in a 5-9 knot wind. In the second fire phase after it lands the two initial markers are placed. Two additional markers are added in each of the next six fire phases, giving the screen a total length of fourteen markers (350 meters). Its burn time being exhausted, four markers are removed each fire phase thereafter until the screen is gone.

Rule 4: White Phosphorus (WP)

A. Smoke:

White phosphorus is generally used to build a quick smoke screen, the procedure used being outlined in the previous rule. Since WP builds quickly but has a short burn time, many smoke missions will consist of one round of WP followed by a round of HC for duration.

B. Incendiary:

WP burns at a very high temperature and thus causes ignition of nearby combustibles. WP may therefore be used to ignite wooden buildings, woods, groves, etc. Ignited buildings and groves will burn for the remainder of the scenario and will eventually produce a smoke screen. The referee should roll the decimal die and multiply the result by 2. At the end of that number of turns, the fire will begin producing a smoke screen equivalent to that produced by the U.S. 155mm HC smoke round, with the same maximum length but an unlimited burn time. Of course, fire in a building or woods forces troops to evacuate the building or area.

WP may also be used to ignite vehicles with external fuel tanks if used in conjunction with HE. If HE fire causes a suppression check or kill check on a vehicle with external fuel tanks, regardless of whether the vehicle is suppressed or not, it is considered vulnerable to WP ignition. If the vehicle is then within the burst radius of a WP round within the next two game turns it has a 70% chance (roll 7 or less on the decimal die) of WP ignition. Any vehicle which suffers WP ignition is destroyed. All soft skinned vehicles have external fuel tanks. In addition, three cases are treated separately.

1. BMP/BMD: The Russian BMP and BMD have fuel cells mounted in the rear doors of the infantry compartment which are vulnerable to HE rupture and WP ignition as explained above. The vehicles themselves are in large part constructed of an alloy of magnesium which, once ignited, will burn quickly and fiercely. Consequently, if a BMP or BMD suffers WP ignition, the infantry bailout survival roll is lowered to 3 or less.

2. Russian MBTs: Russian main battle tanks have auxiliary fuel tanks on the upper side of the vehicle fenders which can be ruptured and ignited. It is possible for the crew to dismount and extinguish the fire under optimal conditions, but this at best a tricky operation. If a Russian MBT suffers WP ignition of its fuel tanks it is destroyed at the beginning of the next fire phase unless it successfully makes a die roll of its CP rating or less. If it makes the roll it may not move or fire for one complete game turn. The saving throw may not be made at all (and the vehicle is therefore destroyed) if during the fire phase after ignition the vehicle is subject to any kind of conventional fire attack, including small arms fire.

3. Direct Hits: If any vehicle suffers a direct hit from a WP round, regardless of whether it has external fuel tanks or not, it is destroyed. If the impact point of a WP round is on a vehicle model, roll the decimal die. On a roll of 1-3 it is a direct hit. Direct fire weapons with WP ammunition may fire it at vehicles by using the hit information of the least accurate round available to the weapon and adding 1 to the die roll. A modified die roll of 11 always misses.

C. Target Destruction:

White phosphorus can be used with great effect against unprotected vehicles and personnel. Although it will not cause the number of casualties that ICM will, the ghastly nature of WP wounds greatly increases its impact on the morale and cohesion of the target unit, and thus will cause similar damage to the unit's

combat ability. When resolving the effects of WP on units in its effect radius, triple all target hardness modifiers. Unlike ICM, WP is effective against targets surrounded by water.

Largely due to the nature of the casualties caused by WP, there have been some attempts to limit its use against unprotected troops in the open. The U.S. Army, in fact, as a matter of policy will not fire WP at infantry in the open for the expressed purpose of target destruction (although this would not prevent a hasty smoke mission in the area if needed). This policy results more from the availability of ICM, a round more effective against troops in the open, than from strictly humanitarian motives. The U.S. Marine Corps, which does not have ICM available, relies on mixed HE and WP concentrations against troops in the open, and it must be assumed that Russian units with WP available will do the same.

Rule 5: Multiple Rocket Launchers (MRLs)

MRLs are treated differently from other types of field artillery.

A. Firing:

The area affected listed on the card is not the burst radius of a single round, but rather the *beaten zone* of the salvo of a single launcher. The beaten zone is expressed as two dimensions in meters, with the longer distance being the depth of the beaten zone and the shorter distance being its width. When the MRLs are fired the entire battery is fired with the pattern of impact covering a broad front the depth of one salvo and the width of one salvo multiplied by the number of launchers in the battery. Thus, a battery of six MRLs, each with a beaten zone of 500 meters x 300 meters, would produce a total beaten zone 500 meters deep and 1800 meters wide.

B. Orders:

An MRL fire order might be written as: "MRL salvo HE out 1300, left 500." The listing out 1300, left 500 is the intended MPI of the battery's right hand launcher. All other MPIs of the battery are placed in direct line to the left of this first MPI with a separation between them equal to one launcher's width of beaten zone.

C. Deviation:

All MRL salvos are subject to major deviation and are considered inaccurate. Deviation is calculated for each MPI separately. This may result in a unit being in the beaten zone of two or more launchers, in which case only one attack on the unit is run but the salvo effectiveness is multiplied by the number of beaten zones covering the unit.

D. Effects:

If firing an HE salvo, all units within the battery's beaten zone are subject to a conventional attack as if they were in the burst radius of a normal HE round. The effect rating on the MRL data card is used. If firing chemical warhead rockets the initial gas cloud is the size of the launcher's beaten zone (see Part 3, Section C, Rule 7). All units in the beaten zone at the time of the impact which have not been previously declared to be protected suffer an adverse die roll modification on their initial kill check from the gas of +2, in addition to any other modifiers.

E. Rates of Fire:

The rate of fire of an MRL is not expressed in the same way as are other weapons. Instead, the ROF will consist merely of a number followed by a second number in parentheses. The first number is the number of rounds in a single salvo. The second number is the number of minutes (complete game turns) required to reload the launcher. The reload time given assumes that the additional rockets comprising the unit's basic load are stored at the battery site. Standard Opfor procedure, however, is to store the additional rounds to the rear. After the first salvo is fired, MRLs will displace to the rear and reload. If this procedure is used, add ten minutes (game turns) to the printed reload time. If this is not followed, the player uses the printed reload time but any counterfire hit on the battery destroys the entire battery automatically.

Rule 6: Nuclear Attacks

Tactical nuclear devices may be delivered by selected field artillery weapons and tactical missiles.

A. Method of delivery:

Field artillery weapons which are listed as having a nuclear round may fire nuclear devices. Determination of the MPI of the blast is done normally, but only one weapon will fire, the MPI indicating ground zero of the weapon. Tactical missiles deliver warheads in the same manner.

B. Procedure:

When a nuclear warhead is delivered its blast area is determined.

First roll the decimal die to determine vertical error. On a roll of one, the weapon impacts on the ground. On a roll of two the weapon achieves a low air burst. On a roll of three through eight the weapon achieves its desired air burst. On a roll of nine the weapon achieves a high air burst. On a roll of ten the weapon achieves a very high air burst. The altitude of the burst determines the lethality of the burst, crater size, area of induced radiation, and fallout (if any). After determining vertical error, locate the correct row of the nuclear effect table for the actual burst altitude and the warhead size. The numbers on the table list the effect radius, in inches from the MPI, of several different effects.

1. Crater: Generally, a round will produce a crater only if it impacts on the surface. No unit may enter the crater of a nuclear device for the remainder of the game.
2. Primary Blast Radius: All soft vehicles, exposed personnel, and light structures within the primary blast radius are destroyed. All hard vehicles and heavy structures within the inner half of the primary blast radius are destroyed; hard vehicles and heavy structures in the outer half of the primary blast radius have an 80% chance of being destroyed.
3. Secondary Blast Radius: All exposed personnel in the secondary blast radius become immediate casualties. All soft vehicles, light structures, and personnel under cover have an 80% chance of being destroyed or becoming casualties. All hard vehicles and structures have a 50% chance of being destroyed. All personnel under cover in the secondary blast radius which survive the initial blast will become casualties within twenty minutes.
4. Tertiary Blast Radius: All exposed personnel in the tertiary blast radius have an 80% chance of becoming immediate casualties. All soft structures, soft vehicles, and personnel under cover have a 50% chance of being destroyed or becoming casualties. Hard targets are not affected.
5. Induced Radiation: For thirty minutes after the detonation of the warhead the area of the tertiary blast radius is considered to be contaminated with induced radiation. Units in the area of the tertiary blast radius must exit the area within five minutes or become casualties. After thirty minutes the area of contamination is reduced to the area of induced radiation as listed on the nuclear effects table. Units which enter the induced radiation radius become casualties. Buttoned up armored vehicles are not affected by initial contamination or induced radiation and may pass through such areas without penalty.
6. Fallout: Fallout will be generated only in the event of a ground burst. If this occurs, a fallout cloud is created the size of the induced radiation radius. The fallout cloud will move down wind each turn at a rate of 50 meters per turn in a 5-9 knot wind, or 100 meters per turn in a 10+ knot wind. All ground over which the cloud passes becomes contaminated as in 5 above.

C. Warhead Size:

The nuclear delivery system table indicates which sizes of warheads may be delivered from which weapons.

D. Blow-Down:

All vegetation within the primary blast radius ignites and burns. All trees in the secondary blast radius are damaged or blown down. For game purposes, all movement through woods in the secondary blast radius, including along roads through such woods, is at half normal movement for the remainder of the game.

E. Limits on Use:

Both sides have the capability to use nuclear weapons tactically, but will undoubtedly exercise discretion

in their employment. The conditions under which either or both players will have one or more warheads available for use should be carefully controlled by the referee and determined prior to the start of the scenario.

Rule 7: Chemical Attacks

A. Types of Agents:

Although a wide variety of lethal and non-lethal chemical agents are included in the inventory of both belligerents, most can be considered to be casualty-producing within the time frame of the game, and will be divided into two general types: persistent and non-persistent agents. Persistent agents will remain and contaminate portions of the battlefield for the remainder of the game while non-persistent agents rapidly dissipate.

B. Methods of Delivery:

Those conventional artillery weapons which are listed as having a chemical round available may deliver chemical attacks. In addition, chemical attacks may be delivered by chemical land mines, tactical missiles, and aircraft. Not all delivery systems can deliver both types of agents, as noted in the following chart:

<i>NP</i>	<i>p</i>	<i>Delivery System</i>
	*	4.2" Mortar
*	*	Field Artillery & MRLs
	*	Chemical Land Mines
*	(*)	Tactical Missiles
*		Aircraft Bombs
	*	Aircraft Spray Tanks

The presence of an * in the NP column indicates that the delivery system noted can deliver non-persistent agents. The presence of an * in the P column indicates that it can deliver persistent agents. The notation (*) indicates that only Russian tactical missiles may deliver persistent agents.

C. Initial Gas Cloud:

Upon impact, a chemical warhead will produce an initial gas cloud the size of the effect radius of the weapon's normal HE round. The size of the initial gas cloud for tactical missiles is listed in rule Part 3, Section D, Rule 3, Tactical Missiles. Chemical land mines have an initial gas cloud 50 meters in diameter. The gas clouds of aircraft bombs and spray tanks are covered in Part 4, Section B, Rule 1, Tactical Air Strikes.

D. Endurance:

Persistent chemical agents have unlimited endurance for game purposes. Non-persistent agents do not. All field artillery rounds have an endurance of three game turns, as do all aircraft bombs. All tactical missiles and MRLs have an endurance of five game turns. The endurance of the gas cloud is the number of game turns it will remain in casualty-producing concentration on the board. This may be affected by the following atmospheric conditions.

1. Wind: In a 0-4 knot wind, add one to the round's endurance; in a 5-9 knot wind the cloud's endurance is unchanged; in a 10-14 knot wind subtract one from the cloud's endurance; in a 15+ knot wind all non-persistent clouds have an endurance of one game turn.
2. Vertical Temperature Gradient: (See Part 4, Section C, Rule 1.) In an inversion gradient, add one to the cloud's endurance; in a lapse gradient subtract one from the cloud's endurance.

E. Drift:

During the fire phase of impact, the initial gas cloud will appear. In the next fire phase the cloud will double in size by the addition of a similarly sized cloud directly downwind of it. (In the case of a cloud from aircraft spray tanks, the cloud will not double if the axis of the cloud is parallel to the wind direction. In this case the cloud becomes 100 meters longer.) In subsequent fire phases the cloud will not increase

in size. Non-persistent agents will drift downwind. Persistent agents will remain stationary. (The gas cloud of a persistent agent is not motionless, but rather is continuously being regenerated by evaporation of the liquid agent on the ground, blown downwind, and dissipated.) The rate of drift of non-persistent agents at different wind speeds is listed below.

Wind Speed	Drift per Fire Phase
0-4 kts	25 meters
5-9 kts.	50 meters
10-14 kts.	100 meters
15+ kts.	200 meters

F. Effects:

The first time a unit is contacted by a gas cloud it must take an immediate kill check, representing the likelihood of the affected unit responding promptly and correctly to the threat. To reflect differences in training and equipment, all U.S. units add one to the die roll while all Opfor units subtract one. A unit which successfully makes its kill check is suppressed. Suppressed vehicle units do not retreat from the cloud but instead remain stationary and may not fire. The die roll for the kill check is further modified by the following factors.

1. Temperature: On very hot days, add one to all die rolls.
2. Precipitation: In periods of precipitation, add one to all die rolls caused by persistent agents.
3. Soil Conditions: In areas of soft, porous soil subtract one from all die rolls caused by persistent agents.
4. Wind: In winds of 15+ knots subtract one from all die rolls.

G. Protection:

Once a unit has made its initial kill check from chemical exposure and survived, it is considered to be chemically protected for the remainder of the scenario. All units operating in a protected state are generally less efficient and more vulnerable to fire due to the effects of limited visibility, heat build-up, etc. To reflect this, all Opfor units reduce their CP rating by one. All U.S. units reduce their CP rating by two. All direct fire weapons of both sides with an ROF of greater than two have it reduced to two. All indirect fire units of both sides may only fire at the sustained ROF. All vehicles are considered buttoned up.

Either player may elect, before the scenario begins, to alert some or all of his units to the possibility of chemical attack and have them assume protective measures as a precaution. If so, these units suffer the CP reduction for being protected throughout the scenario. The units still must take a kill check when first contacting a chemical cloud, but do so with an additional die roll modifier of minus three. This is in addition to all other specified die roll modifications.

H. Counterfire:

If chemical rounds are used in a counterfire mission, any hit on a battery causes the entire battery to make its initial kill check from chemical exposure. Each individual unit of the battery checks separately, as with any other kill check.

I. Limits on Use:

The decision to initiate a chemical attack will not rest generally with individual field commanders, but rather will be made farther up the chain of command. As a result, players may use chemical attacks only if the referee allows them in the scenario, and then general guidelines should be provided (such as number of attacks that may be run, areas off-limits to persistent agents, etc.)

NUCLEAR ATTACK TABLE

Warhead	Altitude	Crater	Primary	Secondary	Tertiary	Induced Radiation
.5 KT	Ground	½"	2"	6"	12"	8"
	Low	—	2"	6"	12"	8"
	Air	—	1"	5"	11"	7"
	High	—	—	4"	10"	6"
	Very High	—	—	—	—	—
1 KT	Ground	½"	2"	8"	14"	8"
	Low	—	2"	8"	14"	8"
	Air	—	1"	7"	14"	7"
	High	—	—	6"	14"	6"
	Very High	—	—	—	—	—
2 KT	Ground	1"	3"	10"	18"	10"
	Low	—	3"	11"	17"	10"
	Air	—	2"	10"	16"	8"
	High	—	—	8"	14"	6"
	Very High	—	—	—	—	—
5 KT	Ground	1"	4"	14"	20"	12"
	Low	—	4"	15"	21"	11"
	Air	—	5"	16"	22"	10"
	High	—	—	10"	18"	8"
	Very High	—	—	—	10"	—
10 KT	Ground	1"	4"	16"	22"	14"
	Low	—	5"	17"	22"	13"
	Air	—	6"	18"	24"	12"
	High	—	—	12"	20"	8"
	Very High	—	—	—	12"	—
20 KT	Ground	1"	8"	16"	24"	16"
	Low	—	9"	17"	26"	14"
	Air	—	10"	18"	30"	12"
	High	—	—	12"	20"	8"
	Very High	—	—	2"	14"	—
50 KT	Ground	1½"	10"	20"	30"	18"
	Low	½"	12"	20"	35"	16"
	Air	—	14"	20"	40"	14"
	High	—	—	12"	20"	9"
	Very High	—	—	3"	18"	2"
100 KT	Ground	2"	14"	20"	36"	20"
	Low	1"	15"	20"	38"	18"
	Air	—	16"	20"	42"	16"
	High	—	—	12"	22"	10"
	Very High	—	—	4"	22"	4"

Delivery Systems

U.S. 155mm: .5 KT, 1 KT Soviet 180mm: 1 KT, 2 KT
 U.S. & Soviet 203mm: 5 KT, 10 KT FROG, Lance: 1 KT to 100 KT
 Scud, Scaleboard, Pershing: 5 KT to 100 KT

Section D: Off-Board Artillery

Rule 1: Placement

Before each scenario the referee should draw small maps of the terrain beyond each end of the table. This should be done on graph paper to facilitate calculation of distances, with one inch equal to one kilometer being a convenient scale. The referee will then inform each player how much artillery is available off the board and where it is located. This will affect its ability to direct fire onto the board and to deliver counterfire against enemy off-board artillery. The lay of the land will also determine whether off-board artillery units are subject to flash ranging in some circumstances, and it is possible that certain off-board positions could be directly observed from on-board locations. Artillery parked in the open 100 meters off the board baseline would not be invisible just because it is not on the playing surface.

Rule 2: Displacement

A player may find it politic to move his off-board artillery to a different location. This may be to put it in range of some newly located target or to move it out of a battery position located by enemy counterbattery target acquisition assets. He may move it either to another location off-board or may move it onto the map. Units may move on or off road with terrain costs approximated by the referee with the aid of the map. Moving off-road is referred to as terrain march and will lessen the chance of aerial spotting or attack if the air rules are used. Units which move to or deploy from firing positions must pay the normal set-up time costs.

Rule 3: Tactical Missiles

Both sides will employ tactical missiles in the next war. Although a variety are available (FROG, Lance, Pershing, Scud) their tactical effects on a game of this scale can be represented by a general rule covering all.

A. Procedure:

Tactical missiles are fired singly, when available at all. They are considered to be deployed far enough to the rear that normal off-board artillery procedures are not necessary. The normal procedure for calling opportunity fire is followed, with two exceptions. First, the Opfor player may only use tactical missiles as part of his fire timetable. Second, there is a 15 turn delay between request and delivery of fire for the U.S. player.

B. Deviation:

All tactical missiles are subject to major deviation and are considered inaccurate.

C. Effects:

Three types of attacks may be launched by tactical missiles: chemical, nuclear, and HE.

1. Chemical Attacks.: A tactical missile has an initial gas cloud 100 meters in diameter and an endurance of five game turns (if firing a non-persistent agent).
2. Nuclear Attacks: A tactical missile has a blast radius dependent on the size of warhead carried. Available warheads are listed on the nuclear weapon effect chart. The specific warhead available should, however, be determined by the referee.
3. HE: The HE warhead of a tactical missile has a burst radius of 100 meters and an effectiveness rating of twenty.

D. Limits on Use:

For both sides, tactical missiles represent the major long-range tactical nuclear delivery capability and, as such, will hardly ever be used in a non nuclear role. In a nuclear setting, U.S. missiles will still not be used often in a close-in tactical situation of the type covered in the game, as the U.S. relies heavily on field artillery for short range tactical nuclear delivery. Russian/Opfor tactical missiles will be used more often in the game as they are both more numerous and represent a larger proportion of the tactical

nuclear delivery capability.

Section E: Doctrine

Rule 1: Dedicated Battery

A. Explanation:

The U.S. has adopted the tactic of dedicating a firing battery to a specific company or team for the purpose of providing highly responsive fires on request. Direct communication is maintained between the company/team and the dedicated battery.

B. Procedure:

When a dedicated battery is available to a company/team, the normal procedure for designating planned fire targets is followed. At all times each platoon (two guns) of the battery is laid on one of the fire plots. The notation used for the platoons will be left, center, and right, abbreviated L, C, and R, followed by the number code of the fire plot. An example of dedicated battery commitment designation would be: L-3, C-4, R-6.

During every friendly movement phase the U.S. player may change the fire plot commitment of one or more platoons. The new fire plot commitment is in effect after the immediately following fire phase.

C. Effect:

Planned fire called on a target to which a platoon is committed arrives

more quickly than normal planned fire, as shown on the indirect fire response time table. Only the platoon committed to the designated target fires at the accelerated response time. All other platoons of the battery may join in the fire after the normal response time.

D. Limitations:

Only U.S. 105mm and 155mm howitzer batteries may serve as dedicated batteries. A dedicated battery may not perform a final protective fire.

Rule 2: Fire Timetable

The Opfor player at the beginning of each scenario must draw up a fire time table for each battery under his command, listing which planned fire targets the battery will fire at in which turns throughout the game. Each target is fired at using the sustained ROF unless otherwise noted. There must be a one turn delay between fire missions at different targets to cover the time required for relaying the guns. Instead of a planned fire point, a range and deflection as for opportunity fire may be given, but no adjustments are possible during the execution of a fire timetable. A typical battery fire timetable would look, in part, like the following.

Turns 1-6: HE, out 1600, left 900.

Turn 7: Relay guns on target 4.

Turns 8-10: HE, target 4, max ROF.

Turn 11: Relay guns on target 6.

Turn 12: WP, target 6.

Turn 13: HC, target 6

The fire timetable must be followed exactly until such time as the battery commander or his immediate superior in the artillery chain of command gives the order "Abort the fire timetable", at which time the battery ceases firing and is available for normal missions. Once the fire timetable has been aborted it may not be resumed.

The Opfor battery commander may issue a "check firing" order, followed later by a "resume firing" order. These do not abort the fire timetable, but no other fire missions may be undertaken while the check firing order is in effect. When the battery resumes firing it begins where the fire timetable was left off.

Part 4: Optional / Advanced Rules

Introduction

The previous sections of this book contain all the rules needed to play most scenarios. The material in this book includes the advanced rules that are optional to the game but give it more depth and detail.

Section A: Basics

Rule 1: Communication

Units must be able to communicate back and forth in order to pass orders, hand off targets, etc. Two types of communication will be considered in this rule: wire communication and radio communication.

A. Wire Communication:

This rule applies to cold war era scenarios only. Modern communications are via radio, microwave and satellite.

Units which are occupying defensive positions at the beginning of the scenario and which have not just moved into those positions may have wire communications between the positions and to positions off-board. Units occupying these positions are always in communication but lose wire communication as soon as they move to a different location. From then on the unit must rely on radio communication.

If players feel the need to incorporate the vulnerabilities of wire communication and do not feel it a needlessly complex burden, the possibilities of wire being cut by enemy fire or movement may be included. The owning player should draw where his communication wires are laid on the referee's map. A wire may be cut if it is in the burst radius of an HE round or if it is passed over by a tracked vehicle. If it is in the HE burst radius of a conventional artillery round or the secondary blast radius of a nuclear weapon there is a 20% chance of it being cut. If it is in the beaten zone of an M RL there is a 40% chance of it being cut. If it is in the primary blast radius of a nuclear weapon it is automatically cut. If a tracked vehicle drives over it there is a 10% chance of it being cut. Additionally, if any enemy unit passes over the wire there is a 10% chance of discovery and intentional cutting.



B. Radio Communication:

Radio communication may be established between units on the board subject to certain limitations.

1. Range:

Most current radios in use have sufficient range that no difficulty is encountered given the scope of this game. In certain older Soviet tank companies, however, the vehicle-mounted radio has a limited range (of about 1000 meters) and such companies have an organic truck carrying a radio retransmission set which allows communication with units at greater range. So long as the retransmission truck is within 1000 meters of the company command tank, the company may communicate normally. If the retransmission truck is destroyed or for some reason is beyond 1000 meters of the command tank, the company may only communicate by radio with units within 1000 meters of it.

Ultra modern units have unlimited communication range thanks to satellite communications. Communications range restrictions do apply to ultra modern forces.

2. Jamming:

Most facets of jamming are beyond both the scope of this game and the expertise of the author. Certain limited jamming may be carried out by combat units, however (such as voice jamming and sweep through) and either side may attempt to jam the other's radio communication.

Each side may attempt to initiate jamming once per scenario at any time. Once initiated, it is assumed that it will continue throughout the scenario. When one side initiates the attempt, the player announces this to the referee. The referee will inform the other player and roll for success of the initial jamming attempt. If the attempt is unsuccessful, there is no effect and it may not be reattempted. If the attempt is successful, all units of the other side lose radio communication. In the next movement phase each unit of platoon size must individually attempt to regain radio communication. Command groups above platoon level and independent units such as FOs below platoon level are treated as platoons. Success in reestablishing communication allows the successful unit to communicate with its immediate superior unit. Thus a platoon regaining communication could communicate with its company headquarters and the company headquarters could communicate with it, even if the company headquarters had not yet been successful in reestablishing communication. Once the company is successful, it may communicate with battalion. This attempt to regain communication may be reattempted by each unit not yet back in communication at the beginning of each subsequent game turn.

Due to the greater versatility of U.S. communication equipment, there is a greater capability for U.S. units to recover communication, while a higher proportion of Soviet electronic warfare assets gives them a greater likelihood of a successful jamming attempt.

Player	Jam	Recovery
Opfor	40%	20%
U.S.	20%	30%

C. Effects of Communication Breakdown:

Units which are out of communication may not call indirect fire missions, may not hand off spotted targets, and automatically are out of command control (see Part 4, Section A, Rule 2). Units may not go to or from sagger watch or overwatch. If a sagger watch vehicle spots an ATGM in flight, it does not allow the target vehicle to dodge (unless that vehicle itself has also spotted the ATGM). The Soviet AT-2 Swatter is a radio guided missile and if jammed successfully will always miss (unless the unit reestablishes communication).

Rule 2: Command Control

A unit must be able to communicate with its headquarters to be in command control. A unit may lose command control either through the elimination of its headquarters or through loss of communication. A unit out of command control due to radio jamming does not suffer the effects until it has failed its first attempt to reestablish communications.

A. Effects:

Upon losing command control a unit must take a control check by rolling the decimal die. If the number rolled is less than or equal to its CP rating the unit passes and will continue to carry out its mission normally. If the unit fails its control check it will cease carrying out its mission. If the unit is advancing it will halt and, if under fire, fall back to a covered position until new orders are received. If the unit is holding a position and is under attack it will retreat and continue doing so until control is reestablished. In many cases referee discretion will be necessary.

If a unit passes its initial control check, it will continue its mission until that mission is accomplished, until a new development occurs, or until command control is reestablished. A new development includes the appearance of heretofore un known enemy units, the sighting of friendly units retreating, initiation of fire by previously unspotted enemy units, etc. A new development requires another control check, with failure results identical to the original check.

B. Reestablishing Command Control:

If communications are broken, reestablishment of communications will automatically reestablish command control (except as noted below). If a headquarters unit is eliminated, control may be reestablished by appointment of a new commander. A new commander may only be appointed if the next highest echelon realizes the problem, which may take some time. At the beginning of the fifth turn after elimination of a headquarters and the beginning of each fifth turn thereafter, a control check is rolled for the next highest headquarters. If the headquarters passes the check the problem has been recognized and a new commander appointed. An actual unit on the table must be designated to fill such a role. If elements of the stricken unit are retreating in sight of the higher headquarters unit, it will automatically recognize and correct the problem after the passage of a number of turns equal to one roll of the decimal die.

C. Headquarters Out of Control:

As a general rule, if a headquarters loses command control and fails its control check, all units subordinate to it lose command control without the ability to attempt a control check. In a situation of a general communications breakdown through jamming, however, it is possible that a head quarters will fail its initial control check but that one or more of its subordinate units will pass. In this case the headquarters would suffer the effects of being out of command control while the subordinate units would not (that is, would operate under their own initiative). If the subordinate unit were later to reestablish communication with its own headquarters, but the headquarters had not yet reestablish ed communication with the next highest echelon, the subordinate unit would then begin to suffer the effects of being out of command control as well.

Rule 3: Ammunition



The Weapon Data Charts list what ammunition is available for various weapon systems. After the basic game system is familiar, players may wish to incorporate the following rules on ammunition utilization for greater realism.

A. Ammunition Supply:

The number of rounds that each vehicle can carry is listed on the vehicle data table. In the case of indirect fire weapons the figure given is generally that carried per gun with the battery or battalion. Players may choose which rounds they wish their vehicles to carry at the beginning of each scenario and use roster

sheets to record this. A sample roster sheet is included for this purpose. The roster sheet included in the game may be photocopied or printed for personal use only in playing the game. As each round is fired, a round of the appropriate type should be checked off.

B. Battle Sight Round:

Direct fire weapons with a choice of several types of rounds (specifically the main armament of tanks) should begin the scenario with the type of round loaded in the weapon noted. This can easily be done by circling the appropriate round type on the roster sheet. When the round is fired, cross it off and circle a new battle sight round. Players who wish to fire a different round than the type loaded may do so in one of two ways.

1. Unload: The player may change the battle sight round but may not fire in the fire phase he does so.

2. Clear the Tube: The player fires the battle sight round and immediately reloads with the desired round. The cleared round automatically misses. The new round may be fired in that part of the fire phase reserved for subsequent rounds, and clearing the tube counts as a round fired for ROF purposes.

C. Limited Ammunition:

Scenarios will not always start with both sides completely stocked with ammunition. In a prepared assault or meeting engagement both sides will generally be carrying a complete load. However, units which have just finished an attack and are defending against a counterattack would have expended much of their ammunition, as would any surviving defenders joining the counterattack. Breakdowns in supply arrangements, especially in the Red Army after a long and fast drive, make resupply difficult as the campaign wears on, and spot shortages of certain types of ammunition may develop as well as local bottlenecks and plain administrative mistakes. All of these provide options for incorporation in scenarios. Resupply of ammunition for units on the battlefield generally will not take place in the course of a scenario but will be delayed until after the engagement is over; in game terms, there is no resupply.

D. Standard Mixes:

For tanks, specialized ammunition such as Ilium and WP will probably not comprise more than 10-20% of the tank's basic load. Different rounds are provided for reasons, and local commanders do not have sufficient latitude to take only their favorite rounds (nor should game commanders). Soviet tanks generally carry about half their basic load as HE rounds for anti-infantry work. The U.S. preferred antitank round in Europe is the HEAT round because of its greater lethality at ranges under 1500 meters. Artillery units will carry a balanced mix of HE and smoke rounds, with special rounds not generally greater than 10-20% of their load. The referee may find it necessary to assign the mix of rounds to players in scenarios to prevent unrealistic stocking of specialized ammunition.

E. Infantry Ammunition: Generally, the only ammunition that needs to be kept track of in infantry units is the number of LAWs that a U.S. unit has. There is no fixed number authorized and they are instead issued as available and depending on the situation. If particularly long scenarios are fought players may wish to limit the ammunition of Soviet BMP-mounted infantry as the size of the BMP does not allow transport of ammunition beyond the personal basic load of the infantry. If so, allow each squad 8 small arms fires.

Rule 4: Maintenance

Maintenance plays an important part in modern warfare due to its heavy emphasis on sophisticated weapons systems and total mechanization. Performance of maintenance tasks is beyond the scope of the game and determination of individual breakdowns during the course of the game would be both tedious and unnecessary. The effect of maintenance should instead be reflected by the initial strengths of the two sides at the start of the scenario.

After generating the scenario and determining forces available to each side, the referee should determine their operational status. The operational status of a unit is influenced by three primary considerations: availability of maintenance, previous use of the vehicle, and intrinsic reliability.

A. Availability of Maintenance:

In an early war scenario (the initial border crossings and assaults, for example) the availability of maintenance is not an important consideration. Both sides, presumably, would have had recent access to preparatory maintenance. In scenarios covering later periods, however, this consideration becomes more important. Key firepower systems employed mostly to the rear will generally have greater access to maintenance than would combat vehicles in the front lines. Therefore artillery and aircraft will have a

generally higher serviceability rate than would MBTs, APCs, etc. Additionally, Opfor maintenance provisions are much more slender than those for comparable U.S. units and thus Opfor units will experience an increasingly higher proportion of unserviceable combat vehicles as the war progresses.

B. Previous Use:

Protracted continuous use will result in breakdown. Thus a unit which has been continually in action can be expected to have a higher rate of unserviceable vehicles than a freshly committed one.

C. Intrinsic Reliability:

Opinions differ as to reliability of different vehicles, but several general statements can be made. Aircraft, by virtue of their high sophistication and need for a considerable safety margin, are generally down more often than other vehicles, all other things being equal. While Russian AFVs are often described as "robust," quality control in construction is lax by western standards and break downs will multiply with ground covered much more than in western units. The use of a dead track instead of the live track used on western tracked vehicles simplifies basic maintenance but multiplies track failure over distance. (However, the T-64 and T-72 use a live track.) Among western vehicles, AFVs mounting the 152mm gun / launcher system (Sheridan and M60A2) experience a higher rate of unserviceability than other vehicles. The M114 scout vehicle employed in the mid -1970's (and included in the vehicle tables due to the possible employment of it with national guard units) was a depressingly unreliable vehicle.

Rule 5: Crossing Water Barriers

Units may cross water barriers in one of five ways: fording, swimming, ferrying, snorkelling, and bridging.

A. Fording:

All soft skinned vehicles and dismounted personnel may ford rivers and streams at a depth of up to one meter. All armored vehicles may ford rivers and streams up to a depth of 2 meters. A firm bottom is required to ford rivers and streams.

B. Swimming:

Certain vehicles are amphibious and may swim across water barriers. These vehicles have an amphibious movement rate listed on their entry on the vehicle data sheet . All amphibious vehicles may fire their armament while swimming. If firing at an armored target they halve the likelihood of hitting; if firing at a soft target they halve the effectiveness of their fire rating.

C. Ferries:

Ferries may be employed to transport non-amphibious troops across water barriers. Each vehicle ferry may carry one vehicle or two infantry squads. Each personnel ferry may carry the number of squads specified on the bridging and ferry data table, and may not carry vehicles. One full game turn is required to load or unload from a ferry. The movement rate of ferries is 50 meters per movement phase while crossing. Ferries are treated as soft vehicles in the open for purposes of indirect fire, but may not be suppressed. Ferries may be fired on by direct fire from an anti-armor weapon using the vehicle data for a soft skinned vehicle such as a truck. Destruction of the ferry causes it and its cargo to sink.

D. Snorkeling:

All Soviet tanks which are not amphibious can snorkel across water barriers. The referee must determine where snorkeling is possible. The following conditions are necessary:

1. The entrance bank must be no steeper than 25 degrees.

2. The exit bank may be no steeper than 15 degrees.
3. The stream current may be no faster than three meters per second.
4. There may be no large floating objects in the water (such as ice floes, uprooted trees, etc.)
5. The water may be no deeper than 5.5 meters.
6. The bottom must be firm and level.

Tanks cross at the rate of 50 meters per friendly movement phase, must cross in single file, and may not stop while submerged. While crossing they are treated as infantry in the open for purposes of indirect fire, but are immune to suppression.

Soviet tanks may snorkel only if they begin the scenario prepared to snorkel. Tanks which begin the scenario prepared to snorkel may not fire their main armament without breaking watertight seals, and once the seals are broken a tank may not be returned to snorkel status within the time frame of the game.

The Soviet player must designate a final assembly area within 800 meters of the crossing site and immediately before snorkelling the tanks must move to the final assembly area to undergo final preparation. Final preparation takes twenty complete game turns, during which the tanks may not move or fire.

Upon emerging from the water the tanks must move to a de-waterproofing site on the far bank. At the de-waterproofing site, dismounted engineer units remove the waterproofing gear from the tanks. One squad of engineers may de-waterproof one tank in three game turns. The three game turns need not be consecutive. Engineers may not work while suppressed. Until de-waterproofed a tank may not traverse its turret. As a result, no anti-armor fire is allowed and fire from the main gun or the coaxial machine gun against soft targets may only be directed at targets directly along the tank's main axis of advance. Note that while firing the main gun breaks the waterproof seals, it does not count as removing the waterproofing gear, and thus does not allow turret traverse.

E. Bridging:

Units may move across bridges as if they were roads. Units with bridging equipment may lay bridgeways at the rate specified on the bridge and ferry data table. Bridging personnel are considered infantry in the open while laying bridges for the purposes of fire, unless launching from a tank-launched-bridge vehicle, which is fired at as an armored target using the Soviet ZSU-57/2 target data (for both Soviet and U.S. bridges). Suppressed units may not lay bridges. Once laid, bridges are fired at on the conventional fire table with no die roll modifiers. A kill result destroys the bridge while any other result is ignored. If a bridge is destroyed any unit on the bridge at the time is also destroyed.

Rule 6: Night

Limited visibility conditions prevail at night (see Part 1, Section C, Rule 5, Visibility) . Five types of augmented night vision will be considered.

A. Means of Night Vision:

1. Artificial Illumination: Mortars and artillery weapons may fire illum rounds if so noted on their data card. Both mortar and artillery illum rounds will illuminate an area 500 meters in radius for one complete game turn. Parachute flares dropped by aircraft will illuminate an area 1000 meters in radius for six complete game turns. Any unit within the illuminated area may be spotted as if in daylight by any other unit, whether or not the spotting unit itself is in the illuminated area. Spotting ranges to a unit in an illuminated area are the normal daylight ranges.
2. Passive Infrared: Passive IR detection devices allow visibility out to 500 meters and allow

detection of active IR equipment at ranges of up to 2000 meters.

3. Active Infrared: Active IR devices allow visibility out to 1000 meters and detection of other active I R devices at ranges of up to 2000 meters.

4. Light Amplification: Light amplification devices allow normal daytime visibility and are not subject to detection by IR devices.

5. Radar: Ground surveillance and target acquisition radar units function normally at night.

B. Equipment Availability:

A wide range of night equipment is available to both sides and referee discretion is required. Some general guidelines are available, however.

1. Soviet Equipment: Soviet night vision equipment relies heavily on active and passive I R techniques. The T-62, T-64, and T-72 as well as some T- 55s are equipped with IR units which may be used in both an active and passive mode. Active I R night sights are available in all artillery units and infantry is equipped with passive IR machine gun sights. Infantry will also often be issued with night detection devices which can be used in either an active or passive mode. Helicopters are equipped with active /passive IR while most other vehicles have passive I R to allow night driving without headlights.

2. U.S Equipment: U.S. night vision relies more heavily on advanced light amplification devices employed at all levels from helicopter sights to man-portable units. Tanks are also equipped with active /passive IR units.

C. General Effects:

All units which fire are spotted by any unit with a direct line of sight to them at ranges up to 5000 meters. Units which do not have night vision capability of some sort have their CP rating reduced by two during periods of darkness.

D. Nuclear Attacks:

Nuclear attacks are significantly more effective at night due to the fact that increased pupil dilation markedly increases the chance of casualty producing retina damage from the flash , even among troops facing away from the detonation. As a result, double the primary, secondary, and tertiary blast radii of the weapon when determining casualties for troops which are not forewarned of the detonation. Friendly troops in communication may be forewarned and are considered suppressed for one complete game turn prior to weapon detonation. Vehicle units become stationary and may not fire.

Section B: Air Power

Rule 1: Tactical Air Strikes

Tactical air strikes may be available to either or both players. Since the purpose of TAC II is to simulate conventional ground combat, the rules for tactical air strikes are intentionally generalized.

A. Availability:

At the beginning of the scenario the referee will decide if either or both players have tactical air strikes available and, if so, how many sorties are available to each. A sortie is one aircraft flying one mission. The player is informed of how many sorties are available and then indicates on which turns he wishes the aircraft to arrive and what ordnance he wishes them to carry. No more than four aircraft may be over the board per side at any one time.

B. Attacks:

The aircraft characteristics chart lists the general capabilities of aircraft in game terms. All aircraft data is consolidated on one chart instead of separate data cards, as reference to the chart will be infrequent. For tactical strike aircraft the chart will list any built-in cannons on the aircraft and the number of attack runs. Following this is a listing of the number of loads the aircraft can carry and the allowed types of loads. Each run a tactical aircraft may attack with one type of ordnance carried and may expend either one or two loads in so doing. If two loads are expended either two attacks may be made or the effectiveness of the attack is doubled (depending on the ordnance used, as noted below). If the aircraft's cannons are fired, either one or two bursts can be fired, depending on ammunition availability. Two bursts allow two attacks.

C. Flight Path:

When the aircraft initially enters the board, it must do so from the owning player's side. The owning player then specifies the point of entry and the flight path (which must be a straight line from one edge of the board to another). In the movement phase the aircraft travels along the flight path and exits the board where the flight path intersects one of the board edges. As the aircraft moves, any attacks it will make are declared, as well as attacks against it by enemy air defense weapons; these will all be resolved during the fire phase. If an aircraft is shot down, any attacks it would have made in later portions of its flight path are not done. After exiting the board, the aircraft must stay off the board for two complete game turns and may then reenter the exited board edge for its next attack run. This is continued until the aircraft exhausts its ordnance or is shot down.

D. Types of Ordnance:

1. Cannons:

For each cannon attack made (burst fired) the aircraft is allowed to make one attack on each unit up to 50 meters to either side of its flight path within any area up to 500 meters long. If two bursts are fired, two 500 meter long segments of the flight path may be attacked, but only one attack is made on each unit in the area. All attacks (including those on armored vehicles) are made using the conventional fire table with a strength of 50. If the aircraft is equipped with a 20mm or 23mm cannon, double all hardness modifiers. If the aircraft is equipped with a 30mm cannon, hardness modifiers remain unchanged.

A special case is the GAU-8 30mm gun mounted on the U.S. A-10 Warthog. The number of attacks run remains the same as for a conventional cannon but the conventional fire table is not consulted. Instead, all units in the area under attack, including MBTs and other armored vehicles, have a 70% chance of destruction. All units surviving destruction are automatically suppressed.

2. Missiles:

Each missile load allows the aircraft to make one missile attack. Each missile impacts as an artillery round with the burst radius and effectiveness listed on the aircraft data chart. The impact point must be placed along or 150 meters to either side of the flight path and is subject to slight deviation (using the slight deviation column of the indirect fire deviation chart).

3. Rocket Pods:

A data table is included which includes the weapon characteristics of the major U.S. and Soviet airborne rocket pod systems. For each rocket pod expended the aircraft may make up to ten attacks on targets which are on or up to 150 meters to either side of its flight path. Attacks against soft targets are conducted on the conventional fire table using the values listed for the rockets at a range of 800-1200 meters and with normal target hardness modifiers in effect. When firing at armored vehicles the anti armor direct fire values are used as if at a range of 1000 meters. (Different ranges are given on the card for use when mounted on helicopters.)

4. Bombs:

Each bomb load allows the aircraft to make one bomb attack against a target up to 50 meters to either side of its flight path. Each bomb attack is conducted as if it were an artillery round impacting and is subject to normal deviation. Target hardness modifiers are used normally. The burst radius and effectiveness of the bomb are listed on the aircraft data chart.

5. Chemical Bombs and Sprays:

Chemical bombs have an initial gas cloud 100 meters in diameter. Spray tanks create an initial gas cloud 100 meters wide and 1000 meters long directly along their flight path. Effects are covered in Part 3, Section C, Rule 7, Chemical Attacks.

6. Napalm:

Each napalm load allows one napalm attack. The attack must be made directly along the flight path. The impact point is chosen by the owning player and is subject to slight deviation. Upon impact, the napalm will cover an area 50 meters wide and 500 meters long. All infantry, gun crews, and soft vehicles in the area are eliminated. All armored vehicles and troops in fortifications with overhead protection take an immediate kill check.

7. CBU Bombs:

CBU (cluster bomb) attacks are resolved identically to regular bomb attacks except that the values listed on the aircraft data chart for CBU bombs are used instead and all hardness modifiers are doubled.

8. Landmines:

The effects of land mines are covered in Part 4, Section D, Rule 1, Mines.

E. Air Superiority Aircraft:

The referee may allow one or both players to have air superiority aircraft in the area. Each air superiority aircraft may remain in the area for five turns plus the roll of one decimal die, and will attack any enemy tactical aircraft that appears during that time. The outcome of the attack is not important for purposes of the ground game since in either event the tactical support mission is aborted. Therefore, at such time as an attack takes place remove both the air superiority aircraft and the



Miniature: GHQ - Paint Job: Allen Rockwell

tactical aircraft from play. If several aircraft are present or if both sides have air superiority aircraft present at the same time, both sides remove an equal number of aircraft until only one side has aircraft left or until all air superiority aircraft have been removed. When trading losses a player always removes air superiority aircraft first.



Miniatures: GHQ - Structures/Scenery: GameCraft Miniatures

Rule 2: Helicopters

A. Movement:

The helicopter section of the aircraft data chart lists the maximum movement capability of each helicopter in meters per movement phase. This capability is used each movement phase; thus, a Soviet Mi-24 Hind with a movement allowance of 2000 meters move a total of 4000 meters in a complete game turn.

Helicopter movement is based on a simplified vector system. At the end of each movement phase, the owning player faces each of his helicopters in the direction of its mean axis of advance and notes how many meters it traveled that phase. At the beginning of the next movement phase the player first determines the

projected endpoint of the helicopter's vector. The projected endpoint of the vector is along the helicopter's mean axis of advance and at a distance equal to the distance the helicopter moved last movement phase. The player next determines his actual endpoint by displacing the projected endpoint a number of meters in any direction.

The endpoint may be displaced a distance equal to 3/4 of the maximum movement allowance of the helicopter. Thus a Hind could displace its endpoint up to 1500 meters from its projected endpoint, even if it was traveling at less than its full movement allowance. This displacement may be used to accelerate, decelerate, turn, or a combination of the above. The helicopter is then moved to its new endpoint and the actual distance travelled is noted. If the new endpoint is farther from the starting position of the helicopter than its maximum movement allowance, the helicopter is moved its maximum movement allowance toward the new endpoint.

Movement normally takes place at or above treetop level. Helicopters may wish to engage in nap of the earth (NOE) flight instead, however. This is done virtually at ground level. Helicopters flying NOE may only do so at speeds equal to or less than 1/3 of their maximum movement allowance. Helicopters flying NOE may still deviate their endpoint by up to 3/4 of their normal maximum movement allowance and additionally may deviate from their normal straight flight path by as much as 150 meters to avoid obstructions (such as buildings, woods, and high hills).



Helicopters are not required to move and may instead remain stationary (hover) and be faced in any direction. Of course, a helicopter moving at its maximum movement allowance could not hover in its next movement phase as it could only decelerate by 3/4 of its speed.

A stationary helicopter may be ordered to execute a popup. A popup consists of rising from behind some form of cover, firing, and dropping back below cover. The effects of popups on air defense fire directed at the helicopter are listed on the air defense fire table.

A stationary helicopter may be ordered to land. A helicopter must land in order to load or unload troops. While landed it may fire only its door guns and is treated as a soft-skinned ground vehicle for all purposes.

B. Spotting:

Each helicopter may make one spotting attempt per movement phase, using the normal spotting table. In addition, helicopters may acquire targets handed off to them from ground units or other helicopters. Helicopters may attempt to spot air defense weapons fired at them during the fire phase as any other unit.

C. Firing:

A variety of armament types are available to helicopters as listed on the aircraft data chart. Ground targets which are spotted may be attacked during the normal fire phase using normal fire procedures as modified below. Each helicopter may only fire one weapon system at a time. Helicopters may fire while moving, while stationary, or while executing a popup.

1. ATGM Fire:

The Mi-24 Hind may fire AT-2 Swatter ATGMs using the normal Swatter weapons data. US helicopters may fire the TOW and Hellfire missiles using the normal missile data however, the dead zone of the missile (the first range band) is increased to 500 meters, all fire beyond 500 meters is resolved using the highest range band on the chart. ATGMs may only be launched by helicopters at targets toward which they are facing (within 20 degrees either side of the mean axis of advance).

2. Rockets:

Rockets are launched from helicopters using the same procedure as for airplanes, except that the actual range to the target is used. Rockets may only be launched at targets toward which the helicopter is pointing, as above.

3. Machine Guns:

Machine guns may be nose mounted in gunships (in either a turret or a flexible mount) or mounted as door guns in a transport helicopter. Nose guns may be fired at any target within 90 degrees on either side of the mean axis of advance of the helicopter. Door guns may fire to the side or within 45 degrees of the side. Data on range and effectiveness is listed on the aircraft data chart.

4. Grenade Launchers:

Helicopters equipped with a 40mm grenade launcher in the nose turret which may fire at targets in the same manner as a nose mounted machine gun with the exception that, instead of engaging a single target, it engages all targets within its burst radius (as listed on the aircraft data chart). When engaging targets at ranges of up to 2200 meters, the impact point is subject to slight deviation. When engaging targets beyond 220 meters the impact point is subject to normal deviation.

D. Dogfights:

Helicopters may be attacked by other helicopters or by air superiority and tactical aircraft. The following procedures are used.

1. Helicopter attacks:

A helicopter may attack another helicopter with its machine guns if at the end of movement an enemy helicopter is within its arc of fire. Fire is conducted using the machine gun column of the air defense table with all normal modifiers for air defense fire.

2. Other Aircraft:

Air superiority aircraft may attack helicopters with cannons as if they were cannon armed (20mm) tactical strike aircraft. Tactical strike aircraft attack helicopters with cannons, rockets, or (if the helicopter is flying NOE) bombs. All attacks by air superiority or tactical strike aircraft are made on the conventional fire table ignoring target hardness.

Air superiority or tactical strike aircraft wishing to make attacks on helicopters must first mark their entry point and angle of flight path on the board edge. The aircraft moves after all helicopters

have moved and attacks if the helicopter or any part of the last half of the helicopter's flight path is in the area in which an attack would normally be allowed. In those circumstances in which an aircraft is appearing over the board for the first time, it may make a surprise attack on enemy helicopters, provided they have already been spotted by other friendly units. In this case the owning player marks the entry position and flight path of the incoming aircraft on his own map and so indicates to the referee. Enemy helicopters still move first, but without knowledge of the likely approach of the hostile aircraft.

E. Transport of Troops:

Each helicopter capable of transporting troops is so listed on the aircraft data chart. Transport capacities are listed in terms of squads. A squad load can consist of one squad stand of infantry, two fire team stands, up to four light weapons or small personnel groups (FOs, platoon command stands, etc.) or one heavy crew-served infantry weapon (81 mm mortar, suitcase sagger, SPG-9, etc. Personnel may load or unload from landed helicopters as for APCs. Equipment unloads similarly, but the time spent dismounting does not count toward the weapon's set-up time.

F. Overfires:

Artillery may not fire over friendly helicopters due to the danger of hitting the aircraft. When friendly helicopters are on the board, no artillery fire may be directed over them or over any area within 500 meters of them. If such a fire mission is being fired when a helicopter moves into a blocking position, an automatic check firing order is given. Artillery may fire over helicopters using NOE movement, but may not fire at a target within 500 meters of the helicopter.

G. Miscellaneous Effects:

Gas has no effect on helicopters. Spotting from helicopters is unaffected by smoke provided the helicopter is not landed or flying NOE and the target of the spotting attempt is not inside the smoke cloud. All helicopters within the tertiary blast radius of a nuclear explosion are destroyed. All helicopters landed or flying NOE and within the burst radius of an indirect fire round are attacked as soft-skinned vehicles.

Rule 3: Tilt Rotors and V/STOL Aircraft

Aircraft like the V-22 Osprey, the Harrier, the F-35B and the Yak-141 follow all the same rules as helicopters (see Part 4, Section B, Rule 2, Helicopters)

Rule 4: Paratroopers

Paratroopers, if available in the scenario, may be airdropped. They are dropped along the flight path of a transport aircraft, which is traced in the same way as for tactical strike aircraft. Transport aircraft conducting the drop must all have parallel flight paths. Individual stands dropped must be separated by 200 meters along the flight path. After the drop, all stands automatically drift downwind from the flight path a distance dependent on the wind speed (as shown below). After all units have drifted, each stand deviates from its final position. Deviation is determined by rolling on the artillery deviation tables called for by the wind velocity, with all lateral deviation being parallel to the flight path and all longitudinal deviation perpendicular to it. Paratroopers may not be dropped on wind velocities of 15 knots or greater.

Wind	Drift	Deviation
0-4 kts	100 meters	Slight
5-9 kts	300 meters	Normal
10-14 kts	600 meters	Major

Upon landing, all paratroopers are suppressed and remain so for one full game turn if landed in the open, or five full game turns if landed in woods, swamp, or built up areas. Paratroopers who land in water are eliminated. Paratroopers who land in a built up area must take an immediate kill check. Paratroopers who land in the open may immediately move to any cover within 100 meters, even though suppressed.

Paratroopers who survive the drop have their CP ratings halved until they regroup. A squad regroups when it comes adjacent to its company command stand or any battalion or regiment/brigade command stand. Company and higher command stands are not themselves required regrouping.

All paratrooper units are considered to be out of communication when they land, and thus are out of command control. They may immediately begin rolling to reestablish communications (as if attempting to recover from a successful communications jam). Once a unit is regrouped, it must either have reestablished communications or must take a control check.

Rule 5: Tactical Recon

Players who have aircraft allocated to them may choose to use them to fly recon flights instead of ground attack or air superiority. Recon flights may be flown over the board or beyond it to locate enemy off-board artillery. Each movement phase on the board the recon aircraft may make one spotting attempt using the normal spotting table at a range of 550-1500 meters, directing it against any area not within 200 meters of its flight path. Aircraft flying off board recon may make one spotting attempt every other movement phase against any area on the grid map drawn by the referee, again using the spotting table at the 550-1500 meters range.

Rule 6: Air Defense Artillery

For game purposes, there are two types of air defense artillery: on board and off board.

A. On-Board Weapons:

On board air defense artillery includes all ADA units actually physically present on the gaming table and all immediately off it in the area of off-board artillery. Air defense guns and missiles may fire at aircraft, which have been spotted. If spotted by the firing weapon, the target may be fired at in the immediately following fire phase. If spotted by a unit other than the firing unit, the aircraft may be fired at two fire phases later (assuming both are in communication). All fire is resolved on the air defense fire table. Once an air defense unit has spotted an aircraft, the aircraft remains spotted even after it leaves the board and thus may be fired on when it reenters for its next attack run. At least 500 meters of an aircraft's flight path (or all of the flight path if it is less than 500 meters long) must be within range of the air defense artillery unit for it to fire at the aircraft.

1. Spotting:

Air defense artillery units spot aircraft using the regular spotting table with three additional modifiers.

- a. All air defense units not equipped with target acquisition radar subtract one from their spotting die rolls when attempting to spot aircraft.
- b. All air defense units equipped with target acquisition radar subtract three from their spotting die rolls when attempting to spot aircraft.
- c. Air defense units with target acquisition radar subtract only one from their die rolls when attempting to spot helicopters flying NOE.

2. Engagement of Ground Targets:

Air defense guns may engage ground targets using the normal anti armor and conventional fire rules.

3. Incidental Weapons:

Certain vehicle mounted heavy machine guns may function in the air defense role. All such weapons that are cupola mounted or on an AA mount may do so. An armored vehicle with a machine gun in an antiaircraft mount may not fire it if buttoned up. An armored vehicle with a machine gun in a cupola mount may fire it if buttoned up.

When using these weapons to fire on helicopters or VTOL aircraft, determining hits is done using normal anti armor methods using a TSSC number for the helicopter. The "percent to kill" from the anti aircraft data sheet is used to determine kills if a hit is achieved.

A hovering helicopter can be shot at with a main tank gun as if it was a soft skinned vehicle.

B. Off-Board Weapons:

In the sense the term is used here, off-board weapons are large missiles generally deployed in rear areas but capable of covering the front lines. These missiles have, for game purposes, a basic 60% chance of hitting; if a missile hits it destroys its target (or at least damages it enough that it aborts its mission). Missiles may be fired at air superiority, tactical recon, or tactical strike aircraft. They may not be fired at helicopters. When generating the scenario the referee must specify if missiles are available and, if so, how many.

Section C. Atmospheric Conditions

Rule 1: Wind

At the beginning of the scenario the referee should roll for wind speed and direction on the following chart. Separate rolls should be made for wind velocity and wind direction. Note that wind direction is the compass heading toward which the wind is blowing, not that from which it is blowing.

Die Roll	Speed	Direction
1	0-4 kts	N
2	0-4 kts	NE
3	0-4 kts	E
4	0-4 kts	E
5	5-7 kts	SE
6	5-7 kts	SE
7	5-7 kts	S
8	8-14 kts	SW
9	8-14 kts	W
10	15 + kts	NW

Periodically the referee should roll to determine if the wind changes direction. This should be done every ten to twenty turns, but done irregularly so the players will not be able to anticipate a wind change. The wind will change direction 20% of the time when rolled for and will not change direction more than one compass heading at a time.

Rule 2: Weather

Not all actions are fought on beautiful days. Referees should consider setting scenarios in inclement weather, to which end the following guidelines are offered.

A. Rain:

Rain reduces visibility to a maximum of 2000 meters or less for both ground units and aircraft. Prolonged rains will reduce soft ground and unpaved roads to mud, halving all movement and presenting the possibility of vehicles becoming mired. Wheeled vehicles moving off-road through soft mud will miss 10% of the time. In each friendly movement phase after becoming mired, there is a 20% chance the vehicle will extricate itself. Any suppression effect causes the crew to abandon the vehicle.

B. Winter:

In winter, woods (unless composed of evergreens) provide less cover than normal and units are not considered under cover unless recessed 50 meters or more into the woods. Movement within the woods may be spotted (as movement under cover) unless it occurs more than 100 meters from the edge of the woods. Add two to the likelihood of spotting any ground unit moving across snow covered ground and add one to the likelihood of spotting any unit stationary in snow. Deep snow halves all movement except where cleared away, as on a road

C. Fog:

Fog reduces visibility to 50-1000 meters. Illum rounds and light amplification devices will not increase visibility. Active and passive IR, however, is effective.

D. Blowing Sand:

Blowing sand can reduce visibility to 0-1000 meters. Illum rounds and light amplification devices will not increase visibility. Active and passive IR, however, is effective.

**Section D: Engineering****Rule 1: Mines****A. Emplacement:**

Mines may be placed manually, by airdrop, or by artillery rounds.

1. Manual Emplacement:

Manual emplacement includes placement both by hand and by mine-laying vehicle, and is sufficiently time consuming that manually placed fields should be specified as in place prior to the scenario. A minefield should be noted by drawing a line on both the referee's map and the owning player's map showing the length, position, and alignment of the field. Each manually laid minefield is 200 meters long and 50 meters deep. Multiple fields may be laid in the same general area to provide greater length or depth. The number of such fields available will vary considerably. In a hasty defense situation, it is likely that no mines will be laid. In a strongly prepared position up to ten such fields may be laid per grid area (square kilometer). Each minefield should be designated as being either antitank or antipersonnel.

2. Airdrop:

Transport helicopters may airdrop mines if the referee allocates a helicopter to such a mission. Generally several helicopters would be available to do so if any are available at all. Each helicopter may lay one antitank minefield 200 meters long and 50 meters wide anywhere along its flight path.

3. Artillery:

U.S. 155mm howitzers may deliver either antitank or antipersonnel minefields. Each mine round

will create an antipersonnel minefield 250 meters in diameter or an antitank minefield 100 meters in diameter, centered on the round's point of impact.

B. Spotting:

Upon approaching the edge of a manually laid minefield, any hostile unit has a 60% chance of discovering it. Any field emplaced by aircraft or artillery is automatically discovered, as is any field manually laid on a road or in a built up area.

C. Removal:

Given the short time spans covered by a game, only four means of clearing minefields are important.

1. line Charges:

Engineer units of both sides employ line charges to clear gaps through minefields. Line charges are flexible tubes of explosives, generally carried over a minefield by rockets. Once the line charge is laid across a mine field it is detonated, clearing a path through the field wide enough for a vehicle. In a combat situation the U.S. employs the M-173 Rocket-Projected Line Charge, which will clear a gap 50 meters long through a minefield. The gap is considered to be wide enough for a vehicle to pass through at normal movement rates. The M-173 is trailer mounted and towed to the edge of minefield where it is set up and fired. For game purposes, it takes dismounted engineers 5 complete game turns to set up the M-173. Suppressed engineers may not set up the M-173, but units interrupted in setup by a suppression may resume where left off after recovering.

The Soviet Union employs the AVL (armored vehicle launched) line charge in engineer units, which is a rocket-projected line charge capable of clearing a gap similar to that of the M-173 but 100 meters in length. It is mounted on the rear deck of a BTR-50 vehicle and the crew does not have to expose themselves to prepare the line charge for launch. The AVL may only fire its line charge while stationary. Fire at the AVL vehicle is resolved using the standard BTR -50 data card.

2. Mechanical Vehicle Clearance:

Mine plows and rollers, when available, may be used to clear gaps through minefields. Vehicles mounting these devices clear gaps by driving through the minefield at full speed, and may not fire their armament unless completely stationary. At the conclusion of the phase in which the vehicle has driven through the field a gap exists wide enough for one vehicle to pass through. As the lane is narrow, other vehicles may only drive through the lane at 1/4 speed and may not fire unless stationary.

3. Clearance By Artillery:

If an artillery HE round impacts on a minefield it will leave a hole in the field around the point of impact with a radius of 50% the round's burst radius. Minefields which fall within the beaten zone of an MRL salvo are eliminated. Detonations of mines in a previously undiscovered minefield will be recognized by hostile observers only 30% of the time.

4. Clearance By Passage:

After one friendly unit has successfully passed through it, a gap exists through the field. Passage of infantry through an antitank minefield will not create such a gap, but passage of an armored vehicle through an antipersonnel field will. All gaps created by the passage of friendly units through a field are treated the same as gaps caused by mechanical clearance.

D. Effects:

Antipersonnel mines attack all soft vehicles, wheeled armored vehicles, and dismounted personnel passing through them. Attacks are run on the conventional fire table with an attack value of 9 with all hardness modifiers in effect. Antitank mines function in the same manner except that all vehicles are attacked, dismounted personnel are not attacked, and all vehicle hardness modifiers are ignored. Vehicles which are suppressed by a minefield will flee back along their entry paths.

Chemical minefields, when detonated, create an initial gas cloud the size of the minefield. Chemical minefields may be detonated by remote control.

Rule 2: Fortifications

Engineer units may create fortified positions prior to the scenario. Fortified positions may range from single weapons pits to hardened or concrete bunkers. Weapons pits are treated as light cover while hard bunkers are treated as hard cover (as are stone or concrete buildings). Both types of cover affect conventional fire as a die roll modification when consulting the conventional fire table. Certain types of rounds are especially effective in defeating hard cover, specifically CP (concrete piercing) and HEP (high explosive, plastic). With the exception of the U.S. 165mm demolition gun (mounted on the M-728 combat engineer vehicle) all weapons with either a CP or HEP round also have an HE round. When firing at hard bunkers or stone/concrete buildings with HEP or CP rounds, the fire value of the HE round is used but the normal target hardness modifiers become plus modifiers instead of minus modifiers. In the case of indirect fire weapons firing CP rounds, the actual impact point of the round must be on the target to have any effect; CP rounds have no burst radius. CP and HEP rounds fired at hard targets have no effect on any unit other than those in the bunkers or buildings.

