TOBRUK

Tank Battles in North Africa: 1942

TOBRUK

Tank Battles in North Africa: 1942

RULES OF PLAY

8141

DESIGN CREDITS

Historical Research and Systems Design: Harold E. Hock.
Rules Development: Randall C. Reed.
Production Assistant: George Uhl.
Components Design and Execution: Randall C. Reed.
Production Coordinator: Thomas N. Shaw.
Playtesting: George Uhl, Hank Freeman, Arvin Van Zante, Rick Archer, Richard Plock, Robert Livermore, Robert Harmon, and Martin Campion.
Special thanks to: Jim Norman, Jerry Forkois, Michael Stong, David Stong, David Munday, George Kettle, Mike Phelps, and Tom Kriz.

Printing: Monarch Services and Colonial Composition, Baltimore, Md.

FIRST PRINTING: July, 1975.
SECOND PRINTING: October, 1975.

REPLACEMENT PARTS COST: For replacement parts price list, send a stamped, self-addressed envelope to: Parts Department, The Avalon Hill Game Company, 4517 Harford Road, Baltimore, Md. 21214.

OUR DESIGN DEPARTMENT will be happy to take the time to answer queries regarding play of this game, but ONLY when accompanied by a self-addressed envelope containing first class postage.

GLOSSARY OF ABBREVIATIONS

AA	Anti-Aircraft weapon.
AAA	Anti-Aircraft Artillery.
AFV	Armored Fighting Vehicle.
ACV	Armored Command Vehicle.
AP	Armor-Piercing.
APC	Armored Personnel Carrier.
APCR	A mor-Piercing Composite Rigid.
ARTY	Artillery.
ATG	Anti-Tank Gun.
ATR	Anti- Tank Rifle.
BOT	Burst On Target.
C	Crew casualties.
C.S.	Close Support.
F	Fired (counter) or F-kill.
(f)	French.
FO	Forward Observer.
G	Gun.
GM	Gun Mantle.
H	Hull.
HE	High Explosive.
HPN	Hit Probability Number.
HPT	Hit Probability Table.
HQ	Headquarters.
(I)	Italian.
K	K-kill.
LH	Lower Hull.
LIG	Light infantry gun (German).
M	M-kill.
MG	Machine Gun.
(Px)	Possibility of K-kill.
PAK	Anti-tank gun (German).
Pzkw	Panzerkampfwagen (tank).
R	Turret Ring.
(r)	Russian.
ROF	Rate-Of-Fire.
S	Smoke.
SP	Self-Propelled.
TR	Track.
TUR	Turret.
UH	Upper Hull.
'—'	Ricochet, miss, no effect.

Acknowledgments

Much time and effort went into the research effort upon which Tobruk was based. Without kindly assistance from personnel from the following organizations, however, nowhere near the required amount of data could have been assembled. For this reason, the author is highly in debt to:

The U.S. ALMC Library, Ft. Lee, Virginia
The Ballistic Research Laboratories, Aberdeen, Md.
The U.S. Air Force Academy Library
The West Point Library
The Morris Swett Technical Library, Ft. Sill, Oklahoma
The Ft. Benning Technical Library
The Armor School Library, Ft. Knox, KY
The Library of Congress
The National Archives and
The Office of the Chief of Military History

without whose assistance *Tobruk* could have never been designed.

MAJOR TOPIC INDEX

TOBRUK

INTRODUCTION

TOBRUK recreates, in a realistic fashion, the tactical-level combat problems encountered by the British Commonwealth, German and Italian forces confronting each other in the North African desert in May and June of 1942. Through a unique set of procedures for resolving combat not found in other AH games, players learn through experience the scope and depth of these problems and gain insight into the difficulties of handling small unit actions. These procedures are introduced in a controlled, logical sequence using what is known in industry as the Programmed Instruction or PI method. In general it consists of introducing the rules of the game in segments, each associated with a scenario drawn from the real battle and each being limited in content and complexity. In this light, a strong recommendation must be made to owners of previous AH games: Due to the extreme differences between the conduct of TOBRUK and that of previous AH games, especially in the area of combat resolution, it is strongly advised that all players play TOBRUK scenario by scenario.

SHORT DESCRIPTION OF PLAY

TOBRUK is played in turns, each representing 30 seconds of elapsed time. Armor, Infantry and Artillery employments are governed by the set rules presented for each scenario which clearly identify allowed and prohibited actions by each player. One or more players are designated as being the British Commonwealth side and one or more players are designated as being the German-Italian or Axis side. In general, at the beginning of a scenario each side holds or enters into one portion of the board and must maneuver its units and engage in combat with units from the other side until time runs out or specified victory conditions are met. These victory conditions are different for each scenario and are intended to "balance out" the scenarios thus making results as much dependent on player skill as possible.

THE PROGRAMMED INSTRUCTION METHOD

TOBRUK uses the Programmed Instruction or PI method for introducing players to the rules of the game. This is done for two reasons. First, TOBRUK is completely novel in its treatment of combat resolution and proper understanding can only be gained through practice with the rules, preferably not all at once. In giving a specific, correlated set of rules with each scenario, this practice is imposed in an enjoyable and realistic way. Second, the very extent of the rules combinations possible, with so many different and inter-related rules in effect, could make the more complex scenarios very difficult for an uninitiated player to handle. With the proper introductory practice, however, even such complicated combined arms scenarios as scenario nine can be played and enjoyed with the minimum of confusion. In all of the following scenarios, it is assumed that rules previously presented are still in effect unless superseded.

COMPONENTS

A. THE MAPBOARD

The mapboard is an hexagonal grid representing the flat, featureless desert terrain where the actual cam-

paign occurred. The hexagonal grid system is used to regulate movement and combat. The shaded hexagons (hereafter called 'hexes') are used to indicate area boundaries for unit placement in the various scenarios. A grid coordinate system, printed around the edge of the mapboard, consists of letters running north-south and numbers running northeast-southwest. Hex locations are identified by cross-referencing a letter hex row with a number hex row. This location system is utilized for certain advanced-game rules.

B. CHARTS

Central to play are the two folding cards containing numerous charts and tables. The most important of these is called the Hit Probability Table. Each player uses his own card to resolve combat and assess damage. One smaller card is also included for use with infantry combat.

C. SCENARIOS

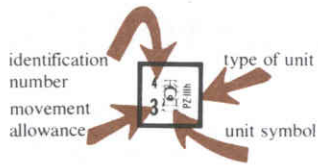
The scenarios referred to in the rules are located in this booklet, at the end of the Rules section.

D. ROSTER PAD

As explained in the rules, the roster pad is used to record a multitude of critical game functions; casualties, vehicular damage, and combat effectiveness. Also included on each roster sheet is a Turn Record Box used to record elapsed turns.

E. UNIT COUNTERS

The two sets of die-cut playing pieces, variously called units, unit counters, or counters, represent individual vehicles, weapons, or small groups of personnel. Printed on each unit counter is information pertinent to the play of the game:



GAME SCALE

Each hex represents 75 meters of terrain from hex side to hex side. Each game turn equals 30 seconds of real time. Each weapon or vehicle counter represents one weapon or vehicle. Personnel units vary, representing from one to eleven men.

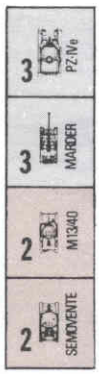
UNIT TYPES:

ARMORED FIGHTING VEHICLES

British:
Stuart
Grant
Crusader
Crusader C. S.
Matilda II
Valentine II

German:
Pzkw-IIIh
Pzkw-IIIj

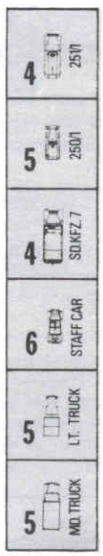
Pzkw-IVe
Marder III
Italian:
M13/40
Semovente



OTHER VEHICLES

British:
Quad
Carrier
Armored Command Vehicle

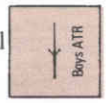
German:
251/1
250/1
Sd kfz. 7
Staff Car
Light Truck
Medium Truck



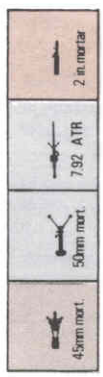
WEAPON UNITS

Light Infantry Weapons:

British:
Boys .55 cal ATR



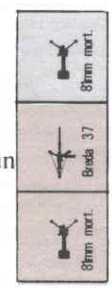
2-inch mortar
German:
7.92mm ATR
50mm mortar
Italian:
45mm Mortar



Medium Crew-Served Weapons:

British:
Vickers Machine gun
3-inch mortar
German:
MG 34 Machine gun

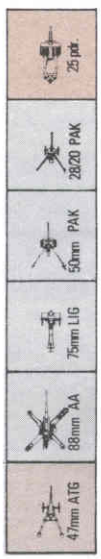
81mm mortar
Italian:
Breda 37 Machine gun
81mm mortar



Heavy Crew-Served Weapons:

British:
2-pounder ATG
6-pounder ATG
75mm (f) ATG
Bofors 40mm AA

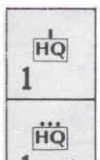
25-pounder Artillery
German:
28/20 PAK
50mm PAK
75mm Light Infantry Gun
88mm FLAK
Italian:
47mm ATG



20mm Breda AA
Stuka

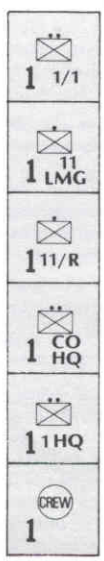
PERSONNEL UNITS

HQ group



Forward Observer

Infantry units



Crew

FIELD EMPLACEMENTS

Minefield
Hedgehog
Weapon Pit
Bunker
Anti-tank Trench

INDICATOR COUNTERS

Fire marker
wreck
Dummy Gun Position
Smoke

I. RULES FOR SCENARIO ONE—'THE CLASH OF ARMOR'

A. DESCRIPTION OF PLAY

Scenario one introduces tank vs. tank combat which is the heart of the TOBRUK game system. After mastering armored combat, players should have adequate preparation for other varieties of combat in later scenarios.

B. SEQUENCE OF TURNS

TOBRUK is played in turns. Each turn contains two SEGMENTS: the movement segment and the combat segment. Within each segment, players alternately move or fire their units as follows:

1. MOVEMENT SEGMENT

a. First player (as designated in the individual scenarios) moves all, some or none of his units at his option, placing movement arrow counters behind those units moved.

b. Second player moves all, some or none of his units at his option, also placing movement arrows behind those units moved.

2. COMBAT SEGMENT

a. SECOND player fires the weapons of one of his units at a target unit, rolls the dice for the effects of that fire, and places an 'F' indicator counter on top of the unit fired.

b. FIRST player fires the weapons of one of his units at a target, rolls the dice for effect, and similarly places an 'F' counter on the unit that fired.

c. Players repeat steps a) and b) until all desired weapons have been fired. If one player finishes firing all of his weapons before the other player, the other player may continue firing until all weapons are fired.

3. At the end of the turn, all movement arrow → and 'F' counters are removed.

C. VEHICULAR MOVEMENT

1. Movement is calculated in terms of hexes. In general, each unit expends one movement point of its total movement (point) allowance for each hex it enters:

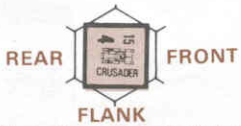
a. In any one turn, a player may move as many or as few of his units as he desires. Movement is voluntary, never required.

b. Each unit is moved individually, tracing the path of movement through each hex in turn. Once a unit has completed its movement, it may not be changed, repositioned, or re-aligned. (A unit's movement is considered completed when the player begins moving another unit).

c. Whenever a unit moves out of the hex it occupied at the beginning of the movement segment a movement arrow is placed behind it at the conclusion of its movement to indicate that it may not fire in that turn.

2. Facing—

a. Each vehicular unit counter has a front, rear, and flank orientation determined by the hex side to which the 'front' of the unit's silhouette is pointed:



b. A vehicular unit must always face towards one definite hex side in the hex it occupies. If the facing is not clear, the opposing player has the option of correcting the facing to one of the two ambiguous hex sides.

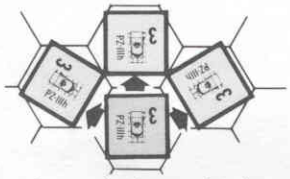
c. Vehicular units must move in the direction of their front facing (i.e., through the front hex side) when moving from one hex to another.

3. Pivoting—A vehicular unit may change it's facing to any hex side within a hex in one of the following two ways:

a. A unit that does not move out of it's hex during its movement segment may pivot to any other hex side in that hex at no movement point cost. The unit MAY STILL FIRE in the combat segment.

b. During movement, a unit may pivot to any other hex side at no movement point cost. A unit may pivot in any hex, including its initial hex. In the last hex it moves into, however, it may only pivot by expending an ADDITIONAL movement point.

4. Reverse—A Vehicular unit may move in reverse towards any one of its three rear-facing hex sides at the rate of one hex per movement segment, maximum. It may pivot a maximum of ONE hex side in either direction to accomplish this. The unit must be facing towards the hex it occupied at the beginning of the movement segment at the conclusion of reverse movement:



5. Vehicular units may freely move into hexes occupied by other units, enemy or friendly, without movement penalty.

D. VEHICULAR UNIT STACKING (More Than One Unit Per Hex)

There is no limit to the number of vehicular units allowed in a hex at any one time.

E. COMBAT

Scenario I introduces tactical tank *vs.* tank warfare. While complex in appearance, combat between armor-piercing weapons (tank weapons and anti-tank guns) and armored-fighting vehicles (AFV's) is in reality a simple, three-step procedure. Combat resolution will speed up tremendously as players become more familiar with the system:

1. During the combat segment, opposing players alternately fire their weapons in an effort to damage or destroy enemy units. During a player's portion of the combat segment, he may fire the armament of ONE of his AFV's at ONE enemy target before giving the opposing player an opportunity to fire.

2. Turreted AFV's have a field-of-fire of 360 degrees. That is, turret weapons may fire in any direction regardless of the facing of the vehicle itself.

3. Weapons may fire through hexes containing other units, enemy or friendly, at targets beyond with no adverse effects.

4. IMPORTANT: No weapon or vehicle which has been moved may fire in the combat segment of the same turn. (Pivoting, without leaving the hex occupied at the beginning of the movement segment, is not considered as 'movement').

5. Each unit may fire the rounds available to its weapons only once per combat segment.

F. ARMOR-PIERCING *vs.* ARMOR COMBAT

In resolving armor-piercing *vs.* armor combat, three questions (or steps) must be answered for each weapon firing at a particular target:

1. QUESTION #1—Has the target been hit? The procedure for answering this is:

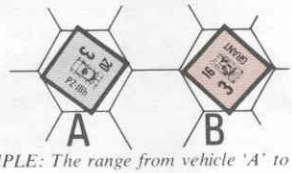
a. The weapon that is firing is located on the proper Hit Probability Table (Axis or British).

1) The number of rounds available to fire is determined: Under the 'ROF' (Rate of Fire) column, there are two sub-columns labeled 'initial' and 'acquired'. If the weapon has fired at the SAME target in the PREVIOUS turn, it has 'acquired' that target (in its gunsights) and thus has the indicated number of rounds available to fire at that target in the current combat segment. If it did *not* fire at that target in the previous turn, the target has not been acquired, and the 'initial' column is used. The sub-column chosen represents the number of times that the weapon may fire in the current combat segment. All such rounds available to the weapon must be fired at the same time at the same target.

2) NOTE: It is strongly recommended that the TARGET AND DAMAGE ROSTER sheet be used to record target acquisition, AFV damage, etc. Simply write the type and I.D. number of the firing unit in the left-most column and record the target acquired under the column labeled 'target' by abbreviating the type and I.D. number. If the firing unit switches targets, does not fire, or moves, cross-off the acquired target.

b. Determine the RANGE from the firing unit to the target. This is found by simply counting the number of hexes (inclusive of the target hex) in the shortest path from weapon to target:

1) The range is then located on the Hit Probability Table and cross-indexed with the type of weapon firing. The number found at this intersection is the Hit Probability Number which is the minimum dice total that must be rolled to obtain a hit on the target.



EXAMPLE: The range from vehicle 'A' to vehicle 'B' is two hexes.

2) If the target moved during the movement segment of the current turn, '1' is added to the Hit Probability Number.

c. Two dice are then rolled for each round available (as found in step a. 1.). If the dice roll is equal to or greater than the Hit Probability Number, the target has been hit by the round fired. Tally the number of hits made. Obviously, if no rounds hit the target, the weapon has finished combat for the current combat segment. If hits are made, however, proceed to question #2:

EXAMPLE: On the Hit Probability Table, the 2-pounder ATG (anti-tank gun) requires a dice roll total of '6' or more for each round fired to hit a stationary target 8 hexes away. Likewise, the 47mm M37 (I) weapon requires a dice roll of '11' or more to hit a stationary target 12 or 13 hexes away.

d. IMPORTANT: If the intended target is at a range such that the firing weapon's Hit Probability Number would be an automatic miss ('-') or greater than '12', the target may not be fired upon by that weapon.

2. QUESTION #2—What part of the target has been hit? For each round that hits the target, follow this procedure:

a. If the target vehicle is NOT a tank or self-propelled gun, Questions #2 and #3 do NOT have to be answered. (This will be amplified in later scenarios).

b. If the target IS a tank or self-propelled gun, the part of the target hit by the round is as follows:

1) Determine the target unit's facing in relation to the firing weapon (called the target's 'aspect'). By definition, this is the target's hex side that faces towards the firing weapon. In other words, it is the target hex side crossed in tracing the SHORTEST path of hexes from the firing weapon to the target.

2) If, in counting the range from the firing weapon to the target, an equal number of hexes lie to the FRONT and to a FLANK hex side, the aspect is assumed to be FRONT.

3) If an equal number of hexes lie to the FLANK and to the REAR, the aspect is assumed to be REAR if the target is stationary, or FLANK if it is moving.

c. The target aspect facing towards the firing weapon is referenced on the 'Area Impacted' chart of the

proper target-type. (This is on each AFV Damage Chart). Two dice are rolled for each hit and cross-indexed with the target's aspect. The result is the part of the target hit. If the result is a '-', the hit richocheted and did no damage. Otherwise, the damage is determined in Question #3:

EXAMPLE: Two hits are made on a German Marder III self-propelled gun. It is facing the firing weapon with its FRONT aspect. Two dice are rolled for each of two hits inflicted on the Marder; the first roll is a '4', the second is a '7'. On the Area Impacted Chart for the Marder, each roll is cross-indexed with the Front aspect row, producing a '-' (richochet) and 'UH' (Upper Hull) result, respectively.

EXAMPLE: Five hits are made on a Matilda II tank facing the firing weapon with its FLANK aspect. Dice rolls of '7', '9', '12', '3' and '10' produce results of 'LH' (lower hull), '-' (richochet), 'R' (turret ring), 'TR' (track), and 'LH' respectively.

3. QUESTION #3—What damage have the hits done to the target? This is found on the Damage Table for the proper target vehicle. For each hit sustained, cross-index the part of the target hit (as found in step #2) with the type of weapon firing. The result is the damage inflicted on the target by that particular round. Such damage is immediately applied to the target unit before any other combat occurs.

a. Damage Table Abbreviations:

UH	—upper hull.	R	—turret ring.
LH	—lower hull.	G	—gun.
TUR	—turret.	GM	—gun mantle.
H	—hull.	TR	—tracks.

b. Explanation of Damage Table Results: Each result on the Damage Table is in a simple code (to pack as much information as possible in a small area). Basically, most results are in the form: (damage) ≤ (range), which means that ALL the stated damage is inflicted on the target if the range is equal to or less than the number to the right of the '≤' sign. If it is greater, then NONE of the damage applies. Where there is no '≤' (equal to or less than) sign, the damage is sustained regardless of the range. Where there is more than one result, only one result will apply depending upon the range. The code is interpreted as follows:

'-' —Richochet; round fails to penetrate. No damage.

'K' —(Kill); catastrophic vehicle destruction and fire. Vehicle destroyed. (K-kill.)

'M' —(Mobility); suspension or track damage, mobility lost. Vehicle may not move or pivot for remainder of game. (M-kill.)

'F' —(Firepower); firepower lost for remainder of game. Unit may not fire main armament for remainder of game. (F-kill.)

'Cx' —(Crew); crew casualties suffered equal to '*x*' as a result of hit.

'(Px)'—Indicates that, in addition to any other damage suffered, there is a *possibility* that the vehicle is K-killed. For this possibility, roll ONE die. If the resultant number is EQUAL TO OR LESS THAN *x*, the vehicle is K-killed.

'≤x' —Damage indicated to the left of the '≤' sign applies only if the RANGE from the target to the firing weapon is EQUAL TO OR LESS than *x*. If it is greater than *x*, there is NO damage and the hit has NO EFFECT.

c. Damage takes effect IMMEDIATELY, regardless of whether the target unit has had an opportunity to fire. Fire is not simultaneous, but consecutive. An AFV's fire procedure is resolved completely before allowing the opposing player to fire one of his weapons.

d. Players record all damage to their own vehicles on their TARGET AND DAMAGE ROSTER as such damage is sustained.

e. SPECIAL: Ignore all 'Cx' results in Scenario #1.

EXAMPLES: In the above examples illustrating Question #2, suppose the Marder III had been hit by a British 2-pounder and the Matilda II had been hit by an Italian 47mm M37(I). The '-' results on both of them would obviously cause no damage. The Front UH *hit on the Marder III, when cross-indexed with the 2-pounder on the Marder Damage Table, can be seen to produce a '-' result (a 'bounce-off'). The four effective hits on the flank of the Matilda II, when cross-indexed with the 47mm M37(I) on the Matilda Damage Table, produce results as follows:*

—The two 'LH' hits give a C1(P5)≤2 *result each, which translates as, 'One crew casualty, with a possibility of a K-kill on a die roll of 5 or less, if the range to target is two hexes or less.' Thus the two 'LH' hits produce a total of two crew casualties, and the die is rolled twice (once for each LH hit) to see if the Matilda is K-killed. If the firing weapon were at a range greater that two hexes, the hits would have failed to do any damage whatsoever to the Matilda.*

—The 'R' hit on the Matilda produces a K/C2 *result. This means that the Matilda is K-killed and its crew suffers two casualties regardless of the range.*

—The 'TR' result on the Matilda produces an 'M' result. This means that the Matilda is immobilized and cannot move or pivot for the remainder of the game regardless of the range.

4. Upon completion of the three-question fire sequence, an 'F' marker is placed on the firing unit to indicate that it has finished combat in the current combat segment.

5. Players will find that, after playing just one game, the fire sequence will become almost second-nature. With practice, the fire resolution sequence should take only about 10-15 seconds for each weapon firing.

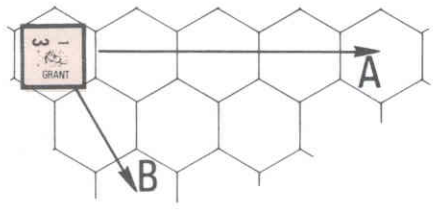
G. ADDITIONAL DETAILS ON ARMORED-PIERCING COMBAT

1. A firing weapon in the SAME HEX as the target does not have to roll on the Hit Probalility Table: all rounds fired are assumed to hit the target. Target aspect in this case must be determined by the direction in which each entered (or faces in) the hex. If both occupy the same hex at the beginning of a turn, the aspect is assumed to be FRONT for both units. Additionally, if firing at a tank or self-propelled gun, the attacker may select, without rolling the dice on the Area Impacted Chart, to score each hit as a LH, UH, H, or TUR hit (if such a hit is possible given the target's aspect to the firing weapon). The firing player must, however, roll the dice to score any other type of hit (R, G, GM, or TR).

2. Special Rules for the Grant Tank—Several peculiarities exist in using this AFV as noted below:

a. The Grant tank has two weapons instead of one: the 37mm M6 in the turret, and the 75mm M2 in the hull. A Grant tank may fire both of these weapons independently during its portion of the combat segment, rather than alternating each separate weapon with a German weapon. Further, they may be fired at completely different targets if desired. Each gun must acquire its target separately.

b. The Grant's 75mm M2 weapon in the hull is severely limited in its ability to engage targets due to its location. Consequently, the 75mm M2 may only fire at targets that are within its 'field-of-fire' which consists of all hexes within the angle formed by its front hex side and its right front-flank hex side, inclusive. Targets that lie outside of this arc may not be fired on by the 75mm M2.



EXAMPLE: The Grant's 75mm M2 gun may only fire at targets that lie within the row of hexes radiating out from hex sides 'A' and 'B', inclusive. (Naturally, the Grant could be pivoted to fire at targets not within this arc).

c. Firepower damage ('F'-kill) on a Grant can obviously occur to either or both of its weapons systems. On the Grant's Damage Table, these loses are recorded as 'F37' and 'F75'.

H. AFV FIRE INITIATION RESTRICTIONS

Unlike artillery units, AFV's can only carry a limited amount of ammunition internally. To conserve ammunition, all combatants employed strict tactical doctrines governing the ranges at which enemy targets could be initially engaged. These 'fire initiation doctrines' are represented by the following rules:

1. An AFV may only initiate fire against an enemy target unit if the UNADJUSTED Hit Probability Number (ie., the basic number unadjusted for target movement, etc.) is equal to or less than '8'.

2. If the Hit Probability Number required to hit a target is greater than '8', that target may be fired upon only if one of the following conditions exists:

a. The target unit first fires at the AFV.

b. The target unit is an AFV which is presenting a FLANK or REAR aspect to the firing unit.

c. When either or both of these conditions exist, the AFV may fire at the target unit regardless of the Hit Probability Number.

3. Once an AFV has fired at a target, it may continue to fire at that target regardless of changes of the Hit Probability Number or the target's aspect.

4. This applies to all direct AP and HE fire from AFV's against any type of target.

5. Players are urged to make simple notations on the AFV Roster to indicate which targets may be fired upon.

6. NOTE: Do NOT use this rule if employing the Experimental AFV Ammunition Limit Rule.

I. OPTIONAL RULE

Optional rules are just that; rules which players may use to add variety and/or complexity to their games. It is recommended that optional rules NOT be used until players have a thorough familiarity with the game-system. Any optional rules presented in a scenario may be used in any other scenario at mutual player consent.

Alternating Movement—At mutual player consent, movement in scenario one may be done in the same manner as combat; one unit at a time, alternating sides. When this is done, however, it is suggested that a roll of the die be used to determine which player moves first and which player fires first in each turn.

STOP! READ NO FURTHER. PLAY SCENARIO ONE.

II. RULES FOR SCENARIO TWO—'THE GROUP CRUWELL FEINT'

A. DESCRIPTION OF PLAY

Scenario two introduces personnel units (infantry, HQ, and crew units), anti-personnel fire resolution, morale, and melee. Note the similarities between anti-personnel fire and scenario one's anti-tank fire. Refer to *Infantry Gunfire Charts* (British, German and Italian), *Casualty*, and *Melee Tables*. Casualties will be recorded on the *Infantry and Crew Roster* pad.

B. ADDITIONS TO THE TURN SEQUENCE

1. The sequence of turns is expanded to include a 'Melee segment' which occurs after the combat segment, as explained further in these rules.

2. The new sequence of turns is:

a. Movement Segment.

b. Combat Segment.

c. Melee Segment.

C. PERSONNEL UNIT MOVEMENT

1. Personnel units are any units containing men: infantry, crew, Headquarters group, or forward observer. Personnel units move in basically the same manner as vehicular units except they do not have a 'facing' and may move in any direction or combination of directions to the limit of their movement allowance.

2. Personnel units normally move at the rate of one hex per movement segment. This is referred to as ASSAULT movement.

3. Personnel units may move two hexes per movement segment provided a particular unit has not moved two hexes in the previous movement segment. Two hex movement is referred to as RUNNING movement.

4. Movement is indicated by simply placing a movement arrow behind those units using ASSAULT movement. For RUNNING movement, place two movement arrows behind those units.

D. PERSONNEL UNIT STACKING LIMITATIONS

1. Each side is limited to SIX infantry and/or crew counters in a hex at any one time. Headquarters (HQ) groups do NOT count towards this limitation; as many HQ groups as desired may be added to a stack of six infantry or crew units without violating stacking restrictions.

2. The presence of vehicular units (which have unlimited stacking) does not affect personnel unit stacking in any manner.

3. NOTE: Certain specific exceptions to the stacking rules will be added further on in the rules. These will be explicitly noted as they occur.

E. PERSONNEL UNIT COMBAT

1. All personnel units are equipped with infantry weapons. During the combat segment, opposing players fire their infantry weapons in an effort to inflict casualties on enemy personnel units.

2. As in armored-piercing combat, infantry units have an all-round, 360 degree field-of-fire and may fire through hexes containing other units with no adverse effects.

3. Personnel units may not, however, fire into hexes containing other friendly personnel units.

4. Each personnel unit may fire only once per combat segment. A single personnel unit's fire may not be divided between two different targets in the same combat segment.

5. IMPORTANT: Unlike AFV's, personnel may fire their weapons and move under certain circumstances:

a. A personnel unit that moves only one hex (assault movement) may fire at one-half normal gunfire factors, rounded down, (see below) in the combat segment of the same turn.

b. A personnel unit that moves two hexes (running movement) may NOT fire in the combat segment of the same turn.

6. The INFANTRY AND CREW ROSTER is central to personnel combat. This roster is used to record casualties, determine current unit strengths, and indicate the current morale level (see below) of individual units. Each personnel unit counter has a corresponding unit symbol and I.D. number on the roster sheet. Below (or to the right of) this symbol is the unit's 'casualty record box'. When a unit sustains casualties, the corresponding number of hit boxes are marked off of the casualty record. The casualty record box displays two pieces of information regarding a unit; the top row of numbers indicates the current number of men in that unit and the bottom row of numbers indicates the 'morale level' (see below) associated with the current strength of the unit:

EXAMPLE: The British 3 HQ unit, which normally contains 7 men when at full strength, has taken two casualties. The current strength is now five men with a corresponding morale level of '9'.

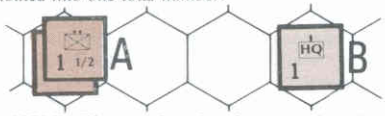
F. RESOLUTION OF ANTI-PERSONNEL DIRECT FIRE

Resolution of anti-personnel fire is a three-step procedure:

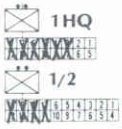
1. STEP #1—The number of GUNFIRE FACTORS (an abstract measure of firepower) being applied to the target is calculated:

a. Count the number of men in the firing unit as indicated on the roster sheet. Determine the range from the firing unit to the target. On the (German, British, or Italian) GUNFIRE TABLE, cross-index these two elements on the proper sub-table for the TYPE of unit firing. The number at the intersection is the number of gunfire factors the firing unit is applying to the target unit.

b. The amount of gunfire factors applied to the target is calculated for all units firing at the target and combined into one total number.



EXAMPLE: The two British infantry sections in 'A' are firing on the Italian HQ group in 'B'. The range is three hexes. The British 1/2 section has incurred four casualties in previous combat, leaving it with six surviving members. Similarly, the 1 HQ unit has only two survivors:



The range and number of men firing are cross-indexed on the British Gunfire Table for each unit firing. Note that there are two different TYPES of units firing, therefore two different sub-tables are used. In this example, the 1/2 unit places 32 gunfire factors on the target and the 1 HQ adds an additional 17 for a total of 49.

2. STEP #2—The COVER STATE of the target unit is determined. 'Cover State' refers to a unit's vulnerability to gunfire and its ability to fire its weapons, dependent upon its degree of exposure.

a. A personnel unit is always in one of the following cover states:

state	description	effect on fire
1) RUNNING cover	two hex movement; in the open.	not allowed.
2) ASSAULT cover	one hex movement; in the open	½ gunfire factors.
3) STATIONARY cover	no movement; in the open.	normal.
4) GOOD cover	on top of field emplacement*.	normal.
5) FULL cover	under field emplacement*.	not allowed.

* hedgehog, anti-tank trench, gun pit, or bunker (see below).

b. Cover states are determined during the combat segment. That is, if a unit moves two hexes and ends movement on top of a hedgehog counter, it is considered to be in a GOOD cover state even though it had to run to reach such cover. EXCEPTION: For fire purposes, however, a unit that RUNS may never fire its weapons regardless of its final cover state.

c. Full Cover—a unit under full cover may not fire during the combat segment. Direct anti-personnel fire has no effect upon units under full cover. A unit may move from full cover to another cover state only during the movement segment at no movement point cost. Such units may fire normally.

d. SPECIAL: A unit already in good cover may 'drop' into full cover (i.e., placed under a field emplacement) at any time during the combat segment PROVIDED that it has not already fired in that same combat segment. Once dropped into full cover, the unit must remain in full cover until the end of the combat segment. A unit may drop into full cover at any time during the combat segment, EVEN as it is being fired upon (but NOT AFTER the die is rolled to resolve the fire). Enemy units attempting to fire on units that drop into full cover must still fire at those units even though the fire will have no effect.

3. STEP #3—Gunfire factors applied to the target in step #1 and the cover state of the target found in step #2 are referenced on the CASUALTY TABLE. Roll one die and cross index the number rolled with the proper gunfire factor column; the resultant number is the number of casualties inflicted on the target unit. Should more than 100 gunfire factors be applied to a target, resolve as separate die rolls. EXAMPLE: 289 gunfire factors would be resolved as two die rolls of 100 each and a third roll of 89.

4. Casualties are immediately recorded on the target unit's roster. Casualties are effective immediately. Once all of a unit's hit boxes are marked off, it is considered eliminated and removed from play.

EXAMPLE: In the step #1 example, 49 factors are applied to the Italian HQ group which is in the open and hence in a STATIONARY cover state. One die is rolled on the 'Stationary' sub-table resulting in a '3' which produces two casualties. Since the Italian unit has only two hit boxes, it is considered eliminated and immediately removed from play.

G. DETAILS ON ANTI-PERSONNEL FIRE

1. As in armor-piercing combat, no more than one unit at a time may be fired upon before giving the opposing player the opportunity to fire. Unlike armor-piercing combat, however, MORE THAN ONE unit may fire at a single enemy unit simultaneously, combining their gunfire factors, to produce one die roll resolution.

2. If a target unit is in a stack with other enemy personnel units, the opposing player has several options:

a. The target unit may be dropped into full cover in which case any casualties would be applied against any other units in the hex in the same cover state (usually good cover) that the target unit formerly maintained. If all such units in the hex drop into full cover, all casualties are ignored.

b. The target unit may absorb all casualties suffered. If eliminated before all casualties have been absorbed, excess casualties are ignored.

c. Casualties suffered by the target unit could be

absorbed, totally or in part, by other personnel units of the same nationality in the same hex that are also in the same cover state. In this case, ALL casualties must be absorbed unless all units in that cover state are eliminated.

3. There is no separate section for running cover on the Casualty Table. Instead, use the assault cover state and multiply the resulting number of casualties by two.

4. As with AFV's, place 'F' counters on units immediately as they fire to avoid confusion.

5. The current strength of a personnel unit does not have to be revealed to the opposing player if the unit is in a stationary, good, or full cover state. If the unit is in assault or running cover, the strength of that unit must be revealed to the opposing player during the combat segment.

H. MORALE

1. At any particular strength, a personnel unit has an associated 'morale value' which is a quantification of the mental state of the men in that unit. The morale value number is located below the number of men in the casualty record box of each unit. As a unit absorbs casualties and is reduced in strength, its morale value is likewise reduced.

2. A unit's current morale value is altered by units, friendly and enemy, within 'morale support range'. By definition, this range is two hexes:

a. FRIENDLY units within a unit's morale support range INCREASE its morale value as follows:

1) For each non-HQ personnel unit, add '1'.*

2) For each HQ group, add '2'.*

3) For each non K-killed, non bailed-out AFV, add '2'.

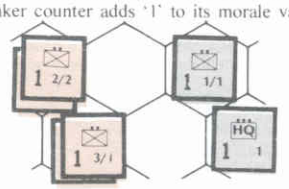
b. ENEMY units within a unit's morale support range DECREASE its morale value as follows:

1) For each personnel unit (including HQ's), subtract '1'.

2) For each non K-killed, non bailed-out AFV, subtract '2'.

c. *SPECIAL: German HQ groups add '2' to both Italian and German units. Italian HQ groups, however, add nothing to German units and add only '1' to other Italian personnel units.

d. Any unit on or under a hedgehog, gun pit, anti-tank trench, or bunker counter adds '1' to its morale value (see below).



EXAMPLE: The basic morale value of the German 1/1 infantry section is '12' because it is at full strength. Four British infantry units, two hexes away, reduce this value by one point each; but the friendly German HQ one hex away adds two points. Therefore, the altered morale value for this unit is '10'.

3. Whenever a personnel unit incurs casualties, the opposing player may, at his option, request a 'morale check' on that unit.

a. Morale checks for all units are conducted at the END of the combat segment. When more than one unit in a hex is being checked, the units with the lowest morale are always checked first, in ascending order.

b. Morale checks may only be made on a unit in the turn in which it sustains casualties. A unit's morale may only be checked once per turn.

c. A morale check is performed by rolling two dice and comparing the number rolled to the unit's ALTERED morale value (as calculated in 2.). If the result is a number GREATER THAN the unit's morale value, the unit's morale has broken and the unit is immediately removed from play. If the result is LESS THAN OR EQUAL TO the altered morale value, the unit is unaffected.

d. Where possible, players should alternate morale checks for opposing units. The morale of non-meleeing units is always checked before checking the morale of meleeing units (see below).

I. MELEE

When opposing personnel units occupy the same hex, they must 'melee' (engage in hand-to-hand combat) as explained below:

1. During the movement segment, a 'melee situation' occurs whenever a personnel unit enters a hex occupied by an enemy personnel unit. The melee situation is RESOLVED after the combat segment during the MELEE RESOLUTION SEGMENT.

2. To engage in melee, a player simply moves personnel units into the hex, announces 'melee' and places a blank counter in that hex.

a. Once the blank counter has been placed, enemy units in that hex are 'frozen' and may not move out of that hex. Other units, friendly or enemy, may still enter that hex.

b. All units in the melee hex, once entered, are frozen and may not move out. All units in the melee hex are involved in the melee resolution.

c. "Melee" is announced immediately as a unit enters a hex occupied by enemy units.

d. The player that announces the melee is considered the ATTACKER, the other player is considered the DEFENDER.

3. Within the melee hex itself, stacking limitations are relaxed. Either side may stack as many personnel units as desired in the hex. Over-stacking must be corrected in the next possible movement segment.

4. No units outside the melee hex may fire at personnel units in a melee hex. Likewise, units engaged in melee may not fire at other units during the combat segment.

5. At the conclusion of the combat segment, morale is checked for all units involved in melee, REGARDLESS of whether or not such units sustained any casualties. The morale of all attacking units is checked before the morale of any defending units. (Note that a unit's altered morale value could change if another unit's morale breaks before it has its own morale checked!)

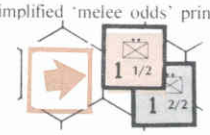
a. An attacking unit whose morale is broken while in a melee situation is NOT removed from play, but it may not participate in the melee and does not affect melee resolution in any manner. (It will also not affect the altered morale value of subsequently checked units, of course.)

b. A defending unit whose morale is broken IS removed from play and considered eliminated.

c. NOTE: If ALL attacking units have their morale broken, NO defending units have their morale checked. No melee takes place in that hex and all of the attacking player's units in that hex are eliminated and removed from play.

6. Resolving Melees—

a. Total the number of men in the hex meleeing for each side. Ignore attacking units whose morale has broken. State these numbers as a ratio, attacker-to-defender, and 'round-down' in the defender's favor to conform to the simplified 'melee odds' printed on the Melee Table.



EXAMPLE: The British 1/2 moves into the hex occupied by the German 2/2 unit. The British player immediately announces 'melee' which freezes the German unit to that hex. Morale is checked, and neither unit breaks. If both units are at full strength of 10 men each, the melee odds would be 10 to 10, which is simplified to 1 to 1. If, for purposes of example, the British unit contained only 9 men, the odds would be 9 to 10, simplified to 1 to 2. If it contained 11 men, the odds would be 11 to 10, simplified to 1 to 1.

b. Determine Casualties—

1) Roll one die. Cross-index the die roll number with the melee odds on the Melee Table. The result will be the casualties sustained by each side. EXAMPLE: 'A4/D2' means the attacker sustains four casualties and the defender sustains two.

2) Recalculate the melee odds at the new strength levels of the participants. Continue rolling the die and extracting casualties until one side is totally eliminated or until the melee odds become worse than 1 to 2 or greater than 4 to 1, at which point the weaker side is automatically eliminated and removed from the mapboard.

7. All melees initiated in the movement segment are completely resolved in the melee segment of the same turn.

8. Casualties may be distributed within the participating units in any manner desired provided all casualties are absorbed.

9. If the attacker is defeated in the melee, attacking units that suffered broken morale are also eliminated from play. If the attacker wins the melee, these units may function normally in the next turn.

10. If there is more than one melee situation, they may be resolved in any order by mutual player consent.

11. Units involved in melee may not participate in normal combat in the same turn.

J. FIELD EMPLACEMENTS

Field emplacements, a general term for minefields, hedgehog entrenchments, anti-tank trenches, bunkers, etc., play a very important role in the game. They will be introduced gradually throughout the rules as called for by the individual scenarios. Usage and placement of field emplacements are outlined in the individual scenarios. Two types are utilized in scenario two; minefields and hedgehog entrenchments:

1. Minefield Counters—Minefield counters represent anti-personnel and anti-tank mines.

a. Only one minefield counter may be placed in a hex.

b. Minefield counters may not be placed in hexes containing any other type of field emplacements.

c. In scenario two, NO units may enter or be placed on hexes containing minefields. (This will be modified and expanded in later scenarios).

2. Hedgehog Counters—Hedgehog counters represent the erection of a network of trenches and foxholes in a hex that provide all-round protection for personnel units:

a. Only one hedgehog counter may be placed in a hex.

b. Hedgehog counters may not be placed in a hex containing any other type of field emplacement.

c. Hedgehog counters do not affect movement or stacking in any way.

d. A unit in a hex containing a hedgehog counter is considered to be in one of two possible cover states:

1) Units UNDER a hedgehog counter are assumed to be in a FULL COVER state. Such units may not fire during the combat segment.

2) Units ON TOP OF a hedgehog counter are assumed to be in a GOOD COVER state. Such units may fire normally during the combat segment.

3) Units may move from full cover to another cover state only during the movement segment. Units may move to full cover at any time provided that they have not already fired in the current turn.

e. Hedgehog counters add '1' to the morale value of units in the same hex. They have no other effect in melee resolution.

f. Hedgehog counters have no effect on stacking limitations. Up to six infantry and/or crew counters and an unlimited number of HQ groups may be on top of or under a hedgehog. In addition, light infantry weapons and medium mortars may operate from hedgehogs. Other weapons may operate from the hex but incur no benefit from the hedgehog.

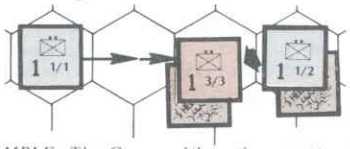
g. Only personnel units and light infantry weapons derive any benefit from hedgehogs. Vehicles and other weapon units treat them as clear terrain for all purposes.

K. OPTIONAL RULES

1. Final Fire In Melees—

a. Both the attacker and defender may execute final fires during the combat segment prior to the melee resolution segment. Such fire is limited to those enemy units with which the firing units are engaged in melee, or those enemy units which otherwise occupy the melee hex.

b. For this type of fire, the range is always assumed to be one hex. Cover states are assumed to be those of the units at such a one hex range. EXCEPTION: Units that run into the melee hex are always assumed to be in running cover.



EXAMPLE: The German 1/1 section runs two hexes and the 1/2 assaults one hex into the hex occupied by the British 3/3. The German player immediately announces 'melee', freezing the British unit. During the combat segment, the British unit has the choice of firing at the German 1/2 (in good cover because of the hedgehog counter), or the 1/1 (in running cover). The German player could fire with the 1/2 at half gunfire factors, but could not fire the 1/1 because it moved two hexes. These fire situations would be resolved as a normal part of the combat segment.

2. Khamsins—Khamsins (desert dust storms) could, and did, sweep across battlefields with blinding suddenness. To represent this, roll one die every ten game turns beginning with the first turn (turns 1, 11, 21, etc) and consult the chart, below. The storm has the effect of reducing the maximum visibility for firing to FIVE hexes for the remainder of the game. No weapon or unit may fire at targets at a range greater than five hexes.

TURN	DIE ROLL FOR KHAMSIN:
1	'1'.
11	'1' or '2'.
21 and after	'1', '2', or '3'.

3. Pre-assault Artillery Softening—Implementation of the full artillery rules does not occur until scenario five. Nevertheless, it is recommended that players employ the following simplistic rule to represent the effects of pre-assault artillery bombardment. Before the start of the game, determine artillery casualties as follows:

a. The British player rolls TWO dice. The resultant number represents German and/or Italian casualties which are marked off the infantry roster at the German player's choice.

b. The German player rolls ONE die. The resultant number represents British casualties which are likewise marked off the infantry roster at the British player's choice.

4. Random First Fire—It is strongly recommended that first fire determination be random rather than rigid. That is, players should roll the die once at the beginning of the combat segment to determine which side fires first. If the number rolled is odd, the British player fires first; if it is even, the German player has the first fire choice.

STOP! READ NO FURTHER. PLAY SCENARIO TWO.

III. RULES FOR SCENARIO THREE—'ACTION AT POINT 171'

A. DESCRIPTION OF PLAY

Scenario three introduces combat between AFV's and personnel units, direct fire from AFV's using high explosive (HE) ammunition, anti-tank guns and their crews, and AFV overrun.

B. WEAPON UNITS

The third major type of combat unit employed in the game (vehicles and personnel units being the other two) are weapon units which represent three different varieties of armament:

1. Light Infantry Weapons—Includes anti-tank rifles (ATR's) and light mortars. These weapons are usually standard armament in an infantry company.

2. Medium Crew-Served Weapons—Includes medium mortars and medium machine guns. These weapons are usually attached to an infantry company and are operated by their own crew personnel.

3. Heavy Crew-Served Weapons—Includes anti-tank guns, anti-aircraft guns, heavy anti-aircraft machine guns, infantry howitzers, and field artillery. Organized in separate artillery units, these heavier-caliber guns also have their own crews.

C. CARRYING WEAPON UNITS

Weapon units may not move by themselves. They do not affect stacking limitations. They require either a personnel unit (for lighter weapons) or a vehicle unit (for heavier guns) to carry or transport them. The following rules apply to all light and medium weapon units although only two different types are introduced in scenario three:

1. Light Infantry Weapons—The following infantry weapons (light mortars and ATR's) may be carried by any personnel unit at a maximum rate of one hex per turn:

a.

BRITISH	GERMAN	ITALIAN
2" mortar	50mm mortar	45mm mortar
Boys ATR	7.92mm ATR	——

b. Each personnel unit may carry a number of light infantry weapons equal to the number of men in the unit. That is, each man may carry one light weapon counter.

2. Medium Crew-Served Weapons—The following medium weapons may be carried by personnel units at a maximum rate of one hex per turn:

a.

BRITISH	GERMAN	ITALIAN
3" mortar	81mm mortar	81mm mortar
Vickers MG	MG 34	Breda 37 MG

b. Medium weapon units may be carried by a personnel unit PROVIDING the personnel unit has three surviving members for each medium weapon unit being carried.

3. Personnel units intending to carry weapon units must begin the movement segment in the same hex as those units. They may move in the same turn.

4. Weapons that are carried in the movement segment may not fire in the combat segment of the same turn.

5. Personnel units attempting to fire while carrying light infantry weapons must subtract the firepower of one man in the unit for each light weapon unit being carried. For each medium weapon, subtract the firepower of THREE men.

6. Pivoting—All crew-served weapons with a restricted field-of-fire (see below) may be pivoted to another hex side within the same hex by any personnel unit containing at least THREE men. The personnel unit must begin the turn in the same hex as the weapon unit. Pivoting is executed in the movement segment. The personnel and weapon units may not move or fire in that turn.

7. SPECIAL: The following heavy crew-served weapons may be 'carried' in the same manner as medium weapons: German 28/20 ATG, Italian 20mm Breda AA, and 47mm ATG.

D. PERSONNEL *vs.* ARMOR COMBAT

Personnel units may only damage or destroy AFV's by using light infantry weapons or crew-served anti-tank weapons. In scenario three, these are represented by the Boys .55-calibre Anti-Tank Rifle (ATR) and the 2-pounder Anti-Tank Gun (ATG). The following rules apply to the use of these weapons and to light-infantry and crew-served weapons in general:

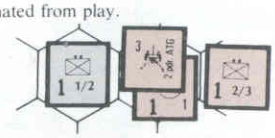
1. Crew Counters—Crew counters are used to operate those weapon units designated as being crew-served. The number of men in a crew unit depends upon the weapon it is operating. Crew sizes for weapons are indicated on the 'CREW' column of the Hit Probability Table. *EXAMPLE: For the 2-pder ATG used in scenario three, the full-strength crew size is FIVE.*

a. Crew counters are listed on the Infantry and Crew Roster like other personnel units. Before beginning play, assign a crew counter to each crew-served weapon called for in the scenario. Cross-off excess hit boxes on each crew's casualty box so that the number of hit boxes conforms to the size of the crew required to operate the weapon. *EXAMPLE: The British #1 crew counter is assigned to 2-pder #1. Since the 2-pder operates with a full-strength crew of five, as listed on the HPT, the three excess hit boxes are crossed-off yielding a casualty box with five hit boxes remaining and a basic morale value of '9'.*

b. Crews are indicated as OPERATING a particular weapon by being placed UNDER that weapon counter.

c. Crews are personnel units. As such, they function within all previously cited rules in regards to stacking, gunfire, movement, etc.

d. Casualties to crews operating weapons may be removed from any other personnel within a one hex range regardless of their cover state. If, however, the crew suffers a number of casualties equal to or greater than its current strength in one firing, the crew counter is eliminated from play.



EXAMPLE: The German 1/2 infantry section, containing nine men, fires at the crew counter manning

the British 2-pder. The crew contains only four men instead of the usual five due to previous casualties. Since the crew is operating the ATG, it is in good cover (see below). Nine men firing at one hex range produce a total of 96 gunfire factors on the target. If the fire had inflicted four casualties (on a die roll of '4', '5', or '6') the crew would be eliminated from play.

The casualties could NOT be removed from the adjacent British infantry unit in this case because the four casualties produced in ONE firing equal the current crew size. If the crew had been at full strength of five men, the casualties could have been absorbed by the British infantry section.

e. In all other respects, casualty absorption by weapon crews is handled in the same manner as for any other type of personnel unit.

f. Crew counters operating weapon units may not fire their personal weapons (i.e., function as infantry) in the same combat segment. They may, however, engage in melee in the normal manner. If meleed, the weapon unit may not be fired.

2. Anti-Tank Guns (ATG)—Anti-tank guns are crew-served weapons that fire in exactly the same manner as armor-piercing weapons described in scenario one:

a. Unlike the main armament in tank's, most crew-served weapons have a restricted field-of-fire consisting of the front three hex sides towards which they are facing. Only targets that lay within this area may be fired upon. Crew-served weapons may change their facing by pivoting.

b. A crew-served weapon may only fire if it has a crew counter operating it. To operate a weapon, the crew must begin the movement segment in the same hex as the weapon unit. To operate the weapon, there must be at least two men in the crew. More than one crew counter may operate the weapon in cases where casualties have reduced unit strengths.

c. Infantry HQ groups which contain two officers, are provided with training in the operation of a wide variety of weapons. Therefore, HQ groups may substitute for crews in operating weapons. When manning weapons, HQ groups function as crew units and must abide by crew rules.

d. Crew-served weapon units are targets for direct fire in the same manner as AFV's and personnel units. ANY hit by any direct fire weapon firing AP or HE will F-kill a medium or heavy weapon unit and destroy the personnel unit operating it. (NOTE: For advanced rules purposes, do NOT remove F-killed weapon units from the mapboard.)

e. Crews operating anti-tank guns are considered to be under GOOD cover.

f. Anti-tank guns are listed on the Hit Probability Table in the same way as main armament in AFV's. Target acquisition, rate-of-fire, and other direct fire rules apply to ATG's. Therefore, they must be listed on the Target and Damage Roster.

3. Anti-Tank Rifles (ATR)—Anti-tank rifles fire in exactly the same manner as other armor-piercing weapons described in scenario one:

a. ATR's are not crew-served weapons, but light infantry weapons. Light infantry weapons may be used by ANY type of personnel unit. One personnel unit may use more than one light infantry weapon provided there is at least one man available for each light infantry weapon being fired.

b. Personnel units operating light infantry weapons are so indicated by being placed UNDER the weapon units.

c. Each man firing a light infantry weapon may not engage in normal infantry gunfire in the same combat segment. If meleed, light weapon units may not be fired.

d. Units that move may not fire light infantry weapons in the same turn. Units which have fired ATR's may not assume a full cover state. In any other respect, however, light infantry weapon units do not affect the operating unit's cover state.

e. Casualties incurred by a unit operating light infantry weapons may be removed from any other friendly units in the same hex providing such units are in the same cover state as the target unit.

f. Light infantry weapons may only be destroyed by an overrun attack (see below). They may not be targets for fire of any kind.

g. Target acquisition, rate-of-fire, and other direct fire rules apply to ATR's. Therefore, they must be listed on the Target and Damage Roster.

E. ANTI-PERSONNEL FIRE FROM AFV's AND WEAPONS

1. Direct Fire With High Explosive (HE) Ammunition—HE direct fire is very similar to armor-piercing (AP) direct fire with the greatest difference being that HE direct fire is applied to personnel and weapon targets while AP direct fire is usually applied to armored targets. The following rules apply to all AFV, crew-served, and light infantry weapons with HE capability. (HE capability is indicated in the 'ammo' column on the Hit Probability Table. If 'HE' is not printed in a weapon's 'ammo' entry, the weapon may not fire high explosive ammunition). As with AP fire, HE direct fire resolution is a three-step procedure:

a. Step #1—The range to target, Hit Probability Number, and rate-of-fire (either initial or acquired) are determined in the same manner as used against armored targets.

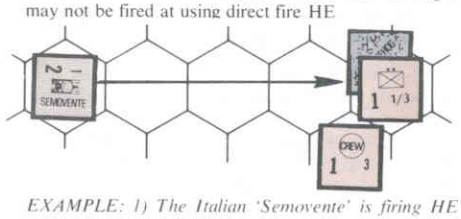
b. Step #2—The number of FRAGMENTATION FACTORS applied to the target is determined: Each round of HE ammo fired produces a certain number of 'fragmentation factors' which are exactly equivalent to gunfire factors described in scenario two. The number of fragmentation factors produced per round by each type of weapon is listed under the 'FRAG' column on the Hit Probability Table. All HE rounds fired at a personnel target (whether a 'hit' or a 'miss') inflict fragmentation factors on the target. The EFFECT of these rounds varies depending on the cover state of the target unit:

1) Roll the dice to determine hits and misses as usual. Separately tally the hits and misses as they are fired at the target.

2) If the target is in GOOD or FULL cover, all HIT fragmentation factors are applied to the target (on the Casualty Table) as if it were in a STATIONARY cover state. All MISS fragmentation factors are applied to the target using the target's ACTUAL cover state.

3) If the target is in STATIONARY, ASSAULT, or RUNNING cover, fragmentation factors produced by ALL rounds (whether hits or misses) are summed and applied to the target using the target's ACTUAL cover state. (In other words, unless the target is in full or good cover, the dice do not have to be rolled to determine hits. Simply determine the number of rounds to be fired, multiply by the number of FRAG factors per round, and apply the resultant number to the target on the Casualty Table).

4) IMPORTANT: If the target is at a range such that the firing weapon's Hit Probability Number would be an automatic miss ('-') or greater than '12', the target may not be fired at using direct fire HE



EXAMPLE: 1) The Italian 'Semovente' is firing HE at the British 1/3 infantry section at a range of four hexes. The Semovente has previously acquired the target and thus has two rounds available to fire. The British player decides to drop the 1/3 into FULL cover (under the hedgehog counter). The two rounds are rolled producing one hit and one miss. The hit reduces the British unit's cover from FULL to STATIONARY: 13 fragmentation factors are then rolled on the Casualty Table's 'stationary' sub-table. The miss does not reduce the target's cover and therefore has no effect against full cover. (Had the target been in good cover instead, the miss would have produced a roll of 13 factors on the 'good cover' sub-table).

2) If the Semovente chose instead to fire at the British 3/crew, hits or misses would not have mattered since the target is in a stationary cover state. The fire would then be resolved as 26 factors on the 'stationary' sub-table.

c. Step #3—Casualties are determined on the Casualty Table in exactly the same way as gunfire factors and recorded in the target's casualty box.

2. Direct Fire With Machine Guns—There are two types of machine gun mounts used in the game; those represented by weapon units and those mounted in AFV's. For AFV's, the number, location, and type of machine guns carried by each type of AFV is listed in the 'MG' column of the Hit Probability Table. For example, the M13/40 carries three Breda-38 machine guns; one in the turret next to the main gun, and two in the lower front hull. Regardless of the type of mount, all machine guns follow the same fire procedure:

a. Locate the type of machine gun being fired on the MACHINE GUNS section of the Hit Probability Table. Note that there is no 'hit or miss' dice roll associated with machine gun fire. Rather, the numbers in the range columns on the HPT refer to the number of GUNFIRE FACTORS each machine gun applies to the target at a certain range. These gunfire factors are used on the Casualty Table in the exact same manner as infantry gunfire and HE fragmentation factors.

b. Medium machine gun weapon units (which appear in later scenarios) function within the carrying and firing rules previously outlined for medium crew-served weapons.

c. Machine guns mounted in AFV's, however, have certain restrictions placed upon them:

1) Only stationary AFV's may fire machine guns. All of the machine guns in a tank may fire together in the same combat segment. All hull machine guns, however, must fire at the same target unit. The turret machine gun may fire independently.

2) Turret machine guns have a range of 18 hexes and an all-round, 360-degree field-of-fire.

3) Hull machine guns have a range of only TWO HEXES. Furthermore, they may only fire at targets which are within a field-of-fire consisting of the front three hex sides towards which the AFV is facing.

4) If the turret machine gun fires, the main turret armament may not fire in the same combat segment, and vice-versa. The hull machine guns and the main turret armament may both be fired in the same combat segment.

5) Any AFV suffering a turret 'F-kill' also loses the use of the turret machine gun.

F. DETAILS ON ANTI-PERSONNEL DIRECT FIRE

1. As can be seen from the rules, certain relationships exist between various weapons systems: Both HE and AP direct fire use the same acquisition system (the HPT). Direct HE, machine gun, and infantry gunfire are applied to the target in the same manner (the Casualty Table). Armor-piercing rounds are all delivered to the target by the same method, the HPT, regardless of their source (AFV's, ATG's, or ATR's). Remember, when firing at personnel targets, fire resolution requires the use of the Casualty Table; when firing at AFV or weapon targets, fire resolution requires the use of the Hit Probability Table.

2. Anti-personnel fire from AFV's, weapon units, and personnel units may be combined against the same target unit for the same fire resolution.

3. Casualty distribution within a stack of personnel units is exactly the same regardless of the type of fire being applied.

4. SPECIAL: The Semovente is a self-propelled howitzer mounting its armament within the hull. Thus the

Semovente has a restricted field-of-fire consisting of its front three hex sides.

G. OVERRUN

Any non M-killed tank or self-propelled gun, when entering a hex occupied by enemy personnel or weapon units, has the option of overrunning those units:

1. Overrun is an optional form of combat. AFV's engaged in overruns may move only one hex per movement segment, although they may pivot to the limit of their movement allowance. That is, an AFV must be adjacent to the hex it intends to overrun at the beginning of the movement segment.

2. Each tank or self-propelled gun may overrun only ONE personnel unit (and/or the weapon units it is operating or carrying) OR ONE un-manned weapon unit per turn.

3. To execute an overrun attack, simply move the AFV into the target's hex and announce 'overrun'. Enemy personnel and weapon units being overrun are 'frozen' and may not move out of the hex. Other enemy units not being overrun are unaffected.

4. Overrunning a personnel unit does not directly damage it. It does, however, reduce the morale value of the unit being overrun by '4' for EACH AFV overrunning it. This reduction is in ADDITION to any other normal morale value alterations and is in effect only during the overrun turn. Units that have been overrun in the movement segment must have their morale checked at the end of the combat segment regardless of whether they sustained casualties in that turn.

5. Overrunning a weapon unit results in that unit's immediate destruction (F-kill). EXCEPTION: Light infantry weapons (ATR's, and light mortars) are not destroyed if they are being carried or operated by personnel units or if they are in entrenchments. Medium mortar units are not destroyed if they are being operated from full cover.

6. An AFV may continue to overrun a unit in a hex for more than one turn by simply remaining in the hex and announcing the continued overrun. It may not, however, fire its weapons and overrun in the same turn. Personnel units being overrun are still frozen in the hex and still suffer the same four-point morale value reduction.

7. Units being overrun may not fire in the combat segment of the same turn. (NOTE: See Optional Rule #1, below, for exception.)

8. Units being overrun while meleeing suffer no additional effects other than the four-point morale reduction.

H. CARRIERS

Scenario three introduces the small lightly armored Carrier on the British side:

1. Carriers move and pivot in the same manner as any other type of vehicle.

2. Each Carrier mounts one Boys ATR as its only weapon, which functions like the main armament of AFV's. The ATR has an all-round, 360-degree field-of-fire. The ATR may only be fired if the Carrier remains stationary. All other direct fire rules apply to the ATR.

3. Carriers are unaffected by infantry gunfire or HE fragmentation factors. Carriers are destroyed, however, by hits from any type of armor-piercing weapon.

I. OPTIONAL RULES

1. Final Defensive Fire on Overruns—Weapon units which are being overrun may fire at the overrunning AFV's in the combat segment of the turn before being removed from play providing the AFV enters the hex from a hex with the weapon unit's field of fire.

a. Each weapon unit may fire at any one overrunning AFV. Players should make notations on their Target and Damage Rosters to identify weapon units that are to be removed at the conclusion of the combat segment (due to being overrun).

b. Final defensive fire is executed like any normal AP direct fire, except that it is assumed to occur at a one hex range. If the fire destroys or immobilizes the overrunning AFV, it is placed in the target unit's hex and may not execute the overrun.

c. Final defensive fire is executed at the ACQUIRED rate-of-fire regardless of whether the overrunning AFV was actually acquired.

2. Field-Of-Fire For The 2-pder—In scenario three, the field-of-fire of the 2-pder is restricted to the front three hex sides. In actuality, however, this weapon was mounted on a 'cruciform' platform which allows the weapon to be quickly pivoted in any direction. Therefore, allow the 2-pder to fire in any direction without pivoting.

STOP! READ NO FURTHER. PLAY SCENARIO THREE.

IV. RULES FOR SCENARIO FOUR—'THE PANZER THRUST IS SLOWED'

A. DESCRIPTION OF PLAY

Scenarios four, five, and six encompass the 'advanced level' scenarios which add various rules to the existing rules system to account for important influences ignored in the basic level scenarios. Scenario four introduces off-board artillery fire, adds important details to AFV combat, and defines a more elaborate turn sequence:

B. ADDITIONS TO THE TURN SEQUENCE

1. The turn sequence is expanded to include an Indirect Artillery Fire PHASE within the combat segment. All of the combat operations previously described occur during the Direct Fire PHASE of the combat segment. Furthermore, morale checks are conducted during the Morale Check PHASE of the combat segment.

2. The revised sequence of turns is:

a. Movement Segment.

b. Combat Segment.

1. Indirect Artillery Fire Phase: Player moving SECOND fires FIRST.

2. Direct Fire Phase: Player moving SECOND fires FIRST.

3. Morale Check Phase: Player moving SECOND checks FIRST.

c. Melee Segment: Melee may be resolved in any order at mutual player agreement.

C. AFV CREWS AND CASUALTIES

1. AFV s, and other vehicles presented in the game, have crews which operate them. Unlike weapon crews, however, these crews are not represented by crew counters.

a. Crews for non-tank/self-propelled vehicles have no visible function and thus are always assumed to operate the vehicle until it is damaged or destroyed.

b. Tank and self-propelled gun crews, on the other hand, are susceptable to casualties in the same manner as weapon crews. Casualties to AFV crews are indicated on the damage charts as Cx results.

2. When tank crews sustain casualties in non-K-kill situations, the vehicle must immediately cease firing for that turn and the owning player must immediately roll one die on the BAIL-OUT CHART (located on the back of the Hit Probability Table card) to determine if the crew stays with the vehicle or bails out (i.e., abandons the vehicle).

3. If the crew bails out, the AFV may not move or fire for the remainder of the game.

4. When a C2 or greater result is sustained AND the crew remains with the AFV, it must attempt to exit the mapboard, away from the enemy, in the most direct route available. It may not fire its weapons or overrun. If it cannot move due to immobilization, the crew automatically bails out.

5. Casualties to AFV crews are cumulative. That is, a crew that remains with the AFV after a C1 result and then sustains another C1 result would roll the die on the C2 row of the Bail-out Chart.

6. Tally crew casualties on the DAMAGE section of the Target and Damage Roster.

D. NEW UNITS

Marder III Self-Propelled Anti-tank Gun: The Marder III is an open top, turretless AFV. The Marder III may only fire at targets that are within its field-of-fire which consists of its three front-facing hex sides. The Marder III crew is susceptable to fragmentation casualties due to the nature of the exposed gun position. The crew considered to be under GOOD cover. The crew may 'drop' into full cover, like weapon crews, in which case it may not fire in the combat segment.

E. COMBAT ADDITIONS

1. APCR Ammunition—During the campaign represented in the game, the Germans had available a limited supply of Armor-Piercing Composite Rigid (APCR) ammunition which had markedly superior penetration capabilities. Limited availability, however, necessitated strict tactical doctrines governing its use in combat:

a. All Pzkw-IIIh, Pzkw-IIIj, Marder III, and 50mm PAK's may fire APCR ammunition. When firing APCR ammo, the regular HPT entries are not used. Instead, use the Special APCR entries on the German Hit Probability Table. When assessing damage to Allied AFV's, use the APCR entries on the Damage Charts.

b. APCR ammo may ONLY be used against Grant, Matilda II, and Valentine tanks. When firing at other types of targets, regular AP ammo must be used.

2. Vehicular Fires—In previous scenarios, destroyed vehicles were simply removed from the mapboard. Henceforth, such vehicles are assumed to be burning and are inverted to show a WRECK counter:

a. Any vehicular unit (including trucks, staff cars, Carriers, etc.) which suffers a K-kill is not removed from the board, but inverted to show the wreck symbol on their reverse side.

b. Any AP or HE direct fire which passes through any part of a hex containing wreck counters is assumed to be partially obscured by smoke and '1' must be added to the Hit Probability Number required to hit the target for EACH wreck counter.

c. To determine if the path of fire (usually referred to as the 'line-of-fire') enters any part of a hex containing a wreck counter, lay a straight edge between the firing unit's hex and the target hex so that the straight edge intersects the approximate center of each hex. If the straight edge passes through any hexes containing wreck counters, the line-of-fire is partially obscured. Wreck counters in the firing unit's hex and/or the target hex also partially obscure the line-of-fire.

3. Gun Duels—In the basic scenarios, a unit under fire could not respond until its own portion of the direct fire phase. With this rule, however, a tank or

heavy crewed weapon unit fired upon may exchange INDIVIDUAL ROUNDS with the instigating unit, subject to the following limitations:

a. When one AFV or weapon unit fires at another AFV or weapon unit, the target unit has the option (if it has not already fired) of returning fire, round for round, against the firing unit until one of the two units is destroyed or all rounds available are fired.

b. The unit beginning the duel is always given the first shot.

c. If the target unit has NOT previously acquired the firing unit (and thus may not fire at full ROF), it cannot return fire until ONE HALF (rounded up) of the instigating unit's rounds have been fired.

d. Each hit inflicted during the duel is evaluated for damage IMMEDIATELY. Units destroyed, F-killed, or suffering crew casualties may not continue firing.

e. A player who responds to enemy fire nevertheless has the next fire choice after the duel is terminated. His response to the duel is not considered as his next portion of the direct fire phase. The unit which returned fire, of course, may not fire again during the turn.

f. For duels involving the Grant tank, both weapons may duel independently with two different targets. If the owning player chooses to fire both guns at the same target, both may fire before the enemy unit may respond.

F. OFF-BOARD INDIRECT ARTILLERY FIRE

Many factors influencing a tactical battle occur beyond the physical limits of the mapboard. Off-board artillery rules represent INDIRECT firepower available to the tactical commanders from artillery batteries located miles away. There are, of course, no unit counters for these batteries. Rather, their fire effectiveness is simply evaluated on the OFF-BOARD ARTILLERY CHART. Off-board artillery fire is one type of indirect artillery fire:

1. Indirect artillery fire is executed during the indirect fire phase of the combat segment. Opposing players alternately fire their off-board batteries with the player moving second executing the first fire. Damage is evaluated and recorded immediately.

2. Indirect artillery fire may be directed against any type of target providing it moves no more than two hexes during the movement segment.

a. No indirect fire of any kind may be directed at enemy units that are adjacent to, or in the same hex as, friendly vehicular or personnel units.

b. Indirect fire may only be directed against an empty hex when firing smoke shell ammunition or when firing at pre-recorded locations (advanced scenarios).

3. Fire Acquisition Procedure—Off-board artillery fire acquisition is a four turn procedure:

a. During the first three turns, the player firing the off-board artillery announces the target being acquired and records this 'acquisition fire' on the ARTILLERY INDIRECT FIRE ROSTER. This 'acquisition fire' has absolutely no effect on the target, but represents the time required to 'zero in' and correct the artillery fire.

b. On the fourth turn of acquisition, the artillery battery may 'fire for effect'. Using the Off-board Artillery Chart, the correct type of battery firing is located and the proper number of fragmentation factors are applied to the target for each battery fired. In addition, two dice are rolled to determine if the battery scores a 'direct hit' against the target.

c. Off-board artillery fire affects different types of targets as follows:

type of target	direct hit	fragmentation
1) personnel units	reduces cover state	roll on Casualty Table
2) weapon units	F-Kill*	no effect
3) AFV's	K-kill	no effect**
4) other vehicles	K-kill	evaluate on non-AFV damage chart

* EXCEPTION: Does not include ATR's or light mortars.

** EXCEPTION: Marder III crews are susceptable to fragmentation casualties.

d. IMPORTANT: If the target moves, direct hits are NOT rolled; evaluate for fragmentation only!

4. Shifting Indirect Fire—

a. Indirect fire may 'move' with a target at a maximum rate of two hexes per turn without losing acquisition or fire-for-effect. That is, indirect fire (both 'acquisition' and 'fire for effect') may shift a maximum distance of two hexes per turn to follow a moving target.

b. If the target moves MORE than two hexes during the movement phase it may not be fired on and all acquisition is lost unless the battery can shift to another target that is within two hexes or unless the battery fires smoke ammunition.

c. Indirect fire may also shift to a different TARGET to a maximum distance of two hexes per turn without losing acquisition or fire-for-effect.

5. Players record indirect fire on the Artillery Indirect Fire Roster. Write the I.D. number of the firing unit or battery in the left column and the I.D. number of the target in the right column. Place a mark next to the target unit for each turn of acquisition.

6. Different types of indirect fire weapons or batteries may combine fragmentation factors for a single die roll resolution on the Casualty Table when firing at the same target. Each weapon must still roll separately for direct hit determination.

7. Players may fire off-board artillery only if there are friendly units on the mapboard.

G. OPTIONAL RULES

1. Turret Facing—It may have occurred to some players by now that an anomaly exists within the 'turret' columns on the various damage charts. Basically, it is assumed on the charts that a tank's turret is facing the same direction as the rest of the tank. Obviously, with a 360 degree field-of-fire, this is not true. A tank could fire at a target while showing the target a rear hull facing. In this case the turret facing (in respect to the target unit) would be 'front', not 'rear'! A simple, but by no means fool-proof, way of mitigating this problem is to evaluate turret facing (and thus turret hits) by assuming the turret is facing in the direction it has fired previously, regardless of the tank's hull facing. If the tank has not fired, or is not acquired on a target, the turret is assumed to face forward. There are problems with this method, but players will find that, in the vast majority of cases, facing will be obvious. If disagreements arise, resolve them with a 'friendly roll of the die'.

2. AFV Reliability—The time scale of the scenarios precludes the occurrence of mechanical breakdown of vehicles during actual play. Breakdowns were significant during the actual campaign, however. To simulate this—and to add variety—players may use the following chart to determine the availability of AFV's prior to their appearance in the scenarios.

1. Use the chart for tanks and self-propelled guns only.

2. Prior to their turn-of-entry, roll two dice for each AFV and consult the chart below to determine if it enters the game. AFV's that do not enter the game are considered as immobilized vehicles for victory point purposes.

3. Do NOT determine availability for those AFV's that BEGIN the game on the mapboard.

4. AFV Reliability Chart—

AFV type	dice roll to prevent arrival:
British:	
Stuart	10.
Grant	11.
Valentine	11.
Matilda	10.
Crusader	10, 11, or 12.
German:	
Pzkw IIIH	11.
Pzkw IIIj	11.
Pzkw IVe	11.
Marder	10.
Italian:	
Semovente	10, 11, or 12.
M13/40	9, 10, or 12.

STOP! READ NO FURTHER. PLAY SCENARIO FOUR.

V. RULES FOR SCENARIO FIVE—'DESTRUCTION OF THE 150th BRIGADE'

A. DESCRIPTION OF PLAY

Scenario five introduces the last major addition to the movement rules: personnel and weapon unit transportation. Additionally, medium crewed weapons, vehicular damage, gun spiking and limited intelligence add new complexities to the game system. The major combat additions include the final two types of indirect fire: mortar and AFV indirect fire.

B. TRANSPORTING PERSONNEL AND WEAPON UNITS.

The vehicular units listed below may transport (carry) personnel units and light and medium weapons and may also tow heavy crew served weapons.

1. Transport—The following chart indicates the transportation (carrying) capacities of the various types of transport vehicles:

TYPE	TRANS-PORT CAPAC-ITY	COVER STATE OF TRANSPORTED UNITS:
British:		
Carrier	3 men.	full cover.
Light Truck	10 men.	assault cover.
Quad	8 men.	assault cover.
ACV	8 men.	full cover.
German:		
Staff Car	3 men.	assault cover.
Light Truck	10 men.	assault cover.
Med. Truck	20 men.	assault cover.
Sd. Kfz. 7	11 men.	assault cover.
251/1	10 men.	full cover.
250/1	6 men.	full cover.

a. Transport capacities are stated in terms of the number of men carried regardless of the actual number of units involved.

b. SPECIAL: One HQ group (or Forward Observer) may always be carried in any of the listed vehicles in addition to their state capacities.

c. Light infantry weapons carried by personnel units may be transported with no additional penalty.

d. In addition to their stated capacities, each transport vehicle may also carry ONE medium machine gun or medium mortar unit.

2. Towing—In addition to carrying units, each transporting unit may also tow one heavy crewed weapon unit:

a. Towing capacities (one weapon unit for all vehicles) are in addition to transport-carrying capacities.

b. For simplicity, all vehicles are assumed to have the capacity to tow any type of weapon unit. EXCEPTION: Only the German Sd. Kfz. 7 and the British Quad may tow the German 88mm FLAK.

c. (Those players desiring a more realistic approach to the towing problem are urged to use the Towing Rules and Chart from the Experimental Rules section.)

3. Procedures—

a. Loading and unloading procedures are exactly the same for both transporting and towing. All loading and unloading is executed in the movement segment.

b. Load—To load, the transporting vehicle and passenger unit must begin the movement segment in the same hex. Units being loaded are placed UNDER the transporting vehicle counter. No movement or fire is allowed in the turn of loading by either the transporting unit or the passenger unit.

c. Unload—To unload, the transporting unit must remain stationary during the movement segment of unloading. Units being unloaded are placed on top of the transporting vehicle counter. No movement or fire is allowed in the turn of unloading by either unit involved.

d. SPECIAL: No weapon unit may be loaded for towing if fired upon by direct fire weapons in the same turn. If loaded in the movement segment of a turn and then fired upon by direct fire in the combat segment of the same turn, a unit must be immediately unloaded as it is fired upon. Note that this does not apply to units which are fired upon using indirect fire.

e. Units may move and fire normally in the turn after unloading.

4. Transporting vehicles carry/tow at their normal movement rates.

5. When the transporting vehicle is fired upon, the units being carried are also affected; the vehicle is affected as per the NON-AFV DAMAGE TABLE and the passengers receive the full fragmentation factors of the rounds fired at their vehicle.

a. Personnel units being transported are assumed to be in either the ASSAULT or FULL cover state (depending on the type of transporting vehicle as indicated on the Transport Capacity chart) and suffer casualties accordingly.

b. Personnel units being carriel by vehicles receiving immediate (non Px type) K-kills are presumed to be completely destroyed.

c. EXCEPTION: Personnel units in vehicles receiving K-kills as a result of a Px outcome are not destroyed, but receive fragmentation from any HE rounds hitting the vehicle.

d. Medium and light weapon units being carried by vehicles receiving any type of K-kills are presumed to be completely destroyed.

e. Weapon units being towed are considered as separate targets for fire determination, adding '1' to the Hit Probability Number for target movement where applicable. If the towing vehicle is K-killed, the towed weapon is unaffected.

6. Personnel units that are in vehicles cannot melee or be meleed. Personnel units may unload and melee normally in the same turn. The side that moves into or unloads in a hex containing unloaded enemy personnel units is assumed to be the attacker.

C. NEW UNITS

1. Light and Medium Mortars—Mortars are on-board, INDIRECT FIRE, artillery weapons. They are listed on the HPT like direct fire weapons, but acquire and shift targets like off-board artillery batteries:

a. Mortars function within the previously cited rules for on-board weapon units.

b. Mortar fire is indirect fire from on-board units. Mortar units fire in the indirect fire phase of the combat segment AFTER all off-board artillery fire has been resolved.

c. Mortars are listed on the Hit Probability Table like other weapons. Note, however, that their rate-of-fire is in the form '0-1'. This means that mortars require one turn of 'acquisition' on their target before their fire has any effect (similar to off-board artillery). The Hit Probability Numbers for mortars refer to their direct hit capabilities and do not affect their ability to deliver fragmentation factors at targets within their range.

d. Unlike off-board artillery, mortars have a limited range as indicated under their 'RANGE IN HEXES' entry on the HPT. They may not fire at targets beyond their range. Also, they may not fire at targets at a range less than one hex (i.e., in the same hex).

e. Mortars may shift their fire and target acquisition two hexes per turn in the same manner as other indirect fire weapons.

f. Effects—Mortars inflict fragmentation damage on any acquired target within range; this damage is not controlled by any dice roll. There is, however, a range-dependent Hit Probability Number which must be rolled to determine DIRECT HITS on the target. Fragmentation and direct hits affect different types of targets as follows:

TARGET TYPE	FRAG MEN-TATION	DIRECT HITS	
		light mortars	medium mortars
personnel	as per Casualty Table	reduces full, good cover to stationary	
AFV's	no effect*.	no effect*.	F-kill: except 81mm vs. Crus. = K-kill.
Non-AFV vehicles	see Non-AFV Chart	K-kill	K-kill
Crewed weapon units**	no effect	F-kill	F-kill

* except if target is Marder. Direct hit = K-kill.
** light weapon units = no effect.

g. IMPORTANT: Mortars may only fire at targets if the line-of-fire between the firing unit and the target unit is completely free of wrecks and/or smoke.

h. SPECIAL: Mortars may be positioned and fired from FULL COVER when located in hedgehog, AT-trench, or weapon pit counters. They are the ONLY weapons that may fire from full cover from these types of field emplacements.

2. Medium Machine guns—Medium machine guns function within the previously cited rules for medium crewed-weapon units. Gunfire effectiveness for machine guns is evaluated on the MACHINE GUN section of the HPT.

3. British 25-pounder—The 25-pder field gun has both an HE and armored-piercing capability as indicated on the HPT. The 25-pder has an all-round field-of-fire.

4. British 6-pounder ATG—The 6-pder ATG is similar to the 2-pder except that it has a field-of-fire limited to its front three hex sides.

5. British QUAD—The Quad was the designated prime mover vehicle for the 25-pder field gun. It is an unarmored, weaponless towing vehicle with a limited transport capacity.

D. COMBAT ADDITIONS

1. Direct Hit Results For Non-AFV Vehicles—As previously stated, direct fire HE or AP hits will K-kill 'soft-skinned' (lightly armored or unarmored) vehicles. These vehicles may also be damaged by lighter weapons, however. When firing at non-AFV vehicles with weapons of 20mm size or smaller, use the Direct Hit Results for Non-AFV Vehicles chart for ascertaining damage from gunfire/fragmentation factors, collateral fragmentation effects, and direct hits from lighter weapons. The notations on the chart are in the same form and have the same effect as those used on the AFV Damage Charts.

2. AFV Indirect Fire—The following types of AFV's may fire HE and smoke ammunition INDIRECTLY in a manner similar to mortar fire:

a. TYPE	RANGE
1) Crusader C.S.	27 hexes.
2) Pzkw IV e	entire mapboard.
3) Semovente	entire mapboard.

b. AFV indirect fire is executed in the indirect fire phase of the combat segment, AFTER all off-board artillery and mortars have fired. AFV's that fire indirectly may not fire directly in the same turn.

c. Indirect fire from AFV's is executed in exactly the same manner as direct fire except that only HE or smoke may be fired and direct hits are NOT rolled for. Fragmentation factors are simply applied to the target at either the 'initial' or 'acquired' rate-of-fire. Unlike other types of indirect fire, there is no 'target acquisition' delay; fragmentation factors are effective the first time that they are fired.

d. AFV's may not fire indirectly at targets if the line-of-fire between the firing unit and the target unit is blocked (intersected by) wreck or smoke counters.

e. SPECIAL: AFV's with indirect fire capabilities may move a maximum of one hex per movement segment AND fire indirectly in the same turn.

3. Spiking Weapon Units—

a. Any type of weapon unit may be 'spiked', or rendered useless, by any personnel unit in the same hex.

b. Weapons may not be spiked if the hex is occupied by enemy personnel units or non-K-killed AFV's.

c. Procedure: Spiking a weapon requires that the weapon unit and the personnel unit occupy the same hex for one complete turn in which neither moves nor fires. The weapon is considered spiked at the beginning of the following turn.

d. Each personnel unit may only spike one weapon per turn.

e. Spiked weapons are not removed from the mapboard. Instead, simply note the weapon's condition on

its Target and Damage Roster entry.

E. FIELD EMPLACEMENTS: WEAPON PITS

Weapon pit counters represent dug-in gun positions providing partial protection for weapons, personnel units, and vehicles:

1. Only one weapon pit counter may be placed in each hex.

2. Weapon pit counters may not be placed in hexes containing other types of field emplacements.

3. Weapon pits do not affect movement in any way.

4. Personnel units occupying weapon pits are considered to be in either good or full cover in the same manner as hedgehog counters.

5. Each weapon pit may hold one weapon unit and it's crew or one vehicle. (NOTE: other units may occupy the same hex, but they cannot enjoy the defensive advantages of the weapon pit.) Units occupying weapon pits have the following defensive advantages:

a. Weapon units: The Hit Probability Number required to hit a weapon unit in a weapon pit is automatically increased by '2' for all direct fire AP and HE weapons.

b. Vehicular units: Non-AFV vehicles are assumed to be in 'full cover' when in weapon pits. They may only be hit by direct fire at range of one hex or less. Mortars must score a direct hit to destroy vehicles. Off board indirect fire must score a direct hit to destroy them (no dice roll modification). AFV indirect fire has no effect. Fragmentation/gunfire factors have no effect unless fired from units at one hex range or less.

c. AFV's: AFV's in weapon pits are assumed to have their hulls completely protected (called 'hull defilade'). Any hits scored by direct fire weapons against AFV's that impact on the lower hull, upper hull, or track areas have absolutely no effect.

d. IMPORTANT: At ranges of one hex or less, DO NOT add '2' to the Hit Probability Number for direct fire against weapons or vehicles in weapon pits. Additionally, ignore 'hull defilade' when firing at AFV's at a range of one hex or less.

e. SPECIAL: Grant tanks may not use their 75mm M2 armament in weapon pits. For Semovente in a weapon pit, ignore ONLY lower hull and track results.

6. Indicate the cover state of personnel units in weapon pits by placing them under the counters for full cover and on top of the counters for good cover. If more than one vehicle or weapon unit occupies a hex containing a weapon pit, the bottom-most unit is considered to be actually in the weapon pit.

7. A unit continues to occupy a weapon pit regardless of its damage status: A vehicle that is K-killed while in a weapon pit remains there (inverted to show a wreck symbol) and prevents other units from occupying that weapon pit. Likewise, a medium or heavy weapon unit that is F-killed while in a weapon pit remains there, preventing other units from occupying the weapon pit, until carried or towed away.

F. LIMITED INTELLIGENCE

To reflect the lack of accurate detailed information a field commander would have concerning enemy defensive positions, employ the following rules:

1. Personnel units occupying field emplacements in a full cover state may never be examined or fired upon by the opposing player unless they move out of their hex or out of full cover and into good cover in the same hex. They may be meleed normally.

2. Light and medium weapons units (ATR's, mortars and machine guns) may be placed under field emplacements when not firing. They may not be examined by the opposing player when in that position. When firing mortars from full cover, their locations must be shown to the opposing player.

3. Heavy crewed weapons may be inverted (and thus expose their gun symbol) when in field emplacements to hide their actual identity. They must be turned face-up when they fire, but they may be re-inverted at the conclusion of combat. They may never be hidden from view by being placed under weapon pit counters.

4. Vehicles in weapon pits must be placed on top of the weapon pit counter. They may never be hidden from view.

G. OPTIONAL RULES

1. Portees—Positioning a weapon 'in portee' means mounting the gun on the bed of a truck in such a manner that the truck bed acts as a firing platform:

a. Any British 2-pder or 6-pder ATG may be mounted 'in portee' on its transporting light truck. ATG's may begin the game in portee at the British player's option.

b. ATG's mounted in portee have a restricted field-of-fire consisting of the rear three hex sides of its hex as indicated by the truck's facing.

c. Trucks mounting ATG's in portee may not tow other weapons. They may only carry the gun's crew as passengers.

d. When firing an ATG in portee, a crew is considered to be in a STATIONARY cover state.

e. ATG's and crews in portee aboard trucks that are K-killed are considered destroyed.

f. An ATG may be mounted or dismounted in portee from a truck in a FOUR turn loading/unloading procedure within which neither the gun, truck or crew may move, fire, or be fired upon by direct fire. A minimum crew of FIVE men is required to perform this function.

2. Forcing Minefields—Any minefield hex may be 'forced' (pushed through) by any vehicle or personnel unit:

a. Any unit attempting to force a minefield must begin its movement segment adjacent to the minefield hex. It may only move one hex onto the minefield counter in that movement segment. It may not pivot.

b. As a unit moves onto the minefield hex, one die is rolled immediately to determine if the forcing attempt is successful. A die roll of '1' means that the unit has successfully forced the minefield hex.

1) If the minefield is successfully forced by any type of vehicular unit, the hex is assumed to be safe for any subsequent units to pass through for the remainder of the game, but never at a movement rate greater than one hex per turn.

2) If successfully forced by a personnel unit, subsequent units must still roll one die for their own forcing attempts.

c. Units unsuccessful in forcing a minefield hex undergo the following damage:

1) AFV's are rendered M-killed (immobilized) and must undergo a bail-out check on the 'C1' line of the Bail-Out Chart.

2) Non-AFV vehicles are rendered K-killed. Any units being carried are considered destroyed. Units being towed are unaffected.

3) Personnel units must undergo the effects of the fragmentation of the detonated mines by rolling one die and multiplying the resultant number by 25 which represents the number of fragmentation factors the unit is exposed to. Consult the 'assault cover' sub-table on the Casualty Table to determine the number of casualties.

3. Riding AFV's—In certain situations, it is sometimes advantageous to transport personnel units on top of tanks or self propelled guns:

a. Each AFV may transport up to eleven men (plus one HQ group).

b. Loading and unloading procedures are the same as for regular transport.

c. When riding on AFV's, personnel units are assumed to be in the ASSAULT cover state.

d. When fired upon, both the AFV and the passenger units are affected; the AFV is affected according to the Damage Charts and the personnel units receive the effects of any fragmentation factors generated by that fire. If the AFV is K-killed by DIRECT FIRE, the passenger units receive only the effects of fragmentation. If the AFV is K-killed by INDIRECT FIRE, the passenger units are completely destroyed.

e. NOTE: Personnel units must unload from an AFV whenever it stops to fire its main gun or machine guns. Also, whenever an AFV is hit by a projectile of 20mm or larger, the passengers must be unloaded, immediately, in the combat segment.

f. Indicate transported units by placing them under the AFV counter.

STOP! READ NO FURTHER. PLAY SCENARIO FIVE.

VI. RULES FOR SCENARIO SIX—'ABERDEEN'

A. DESCRIPTION

Scenario six concentrates on the elaboration of indirect fire rules. These rules, especially smoke and collateral damage, will result in major changes to tactics and strategy of play. Artillery will have an increasingly greater role as befits its historical performance.

B. NEW UNITS.

1. British Crusader Close Support (C.S.) Tank—The Crusader C.S. was the basic Crusader with the 2-pder anti-tank gun replaced by a 3-inch howitzer:

a. As noted on the HPT, the Crusader C.S. may only fire HE and smoke shells. It may fire directly or indirectly. When firing indirectly, use the previously cited rules for AFV indirect fire.

b. When firing DIRECTLY, the Crusader C.S. uses the HPT to determine direct hits. NOTE: When firing at AFV's, the Crusader C.S.'s 3-inch howitzer causes no damage EXCEPT that direct hits on tracks (TR) cause M-kills and direct hits on turret rings (R) or guns (G) cause F-kills.

2. German 75mm LIG—The 75mm LIG howitzer was the standard German infantry support weapon on the Western Desert:

a. As noted on the HPT, the 75mm LIG may only fire HE and smoke shells. It may fire directly or indirectly in the same manner as indirectly firing AFV's.

b. When firing directly, the 75mm LIG uses the HPT. It has exactly the same limitations on AFV damage as the Crusader C.S. When firing indirectly, it has an unlimited range.

c. The 75mm LIG has a field-of-fire consisting of its front three hex sides.

3. German 88mm FLAK (ATG)—The 88mm FLAK was the most devastating weapon on the desert battlefields when used in its anti-tank role. Its large size, however, produced some handicaps:

a. The 88mm FLAK (AA) fires directly, using its appropriate entry on the HPT.

b. When firing at the 88mm FLAK in the open, subtract '1' from the Hit Probability Number required to hit it. When in a weapon pit, use the unadjusted Hit Probability Number; do NOT add '2'.

c. The 88mm FLAK has an all-round field-of-fire.

4. German Sd. Kfz. 7 Half Track Prime Mover—This vehicle was the prime mover for the 88mm FLAK. As such, it is the only German vehicle that may tow it. It conforms to all other rules in regards to transport vehicles.

C. COMBAT ADDITIONS

1. Smoke and Target Obscuration—As previously mentioned, wreck counters partially obscure the line-of-fire for direct fire weapons and on-board indirect fire. Smoke shells, however, when fired into a target hex, completely obscure the line-of-fire into or out of that hex.

a. Smoke shell ammunition may be fired by all off-board artillery batteries and those on-board units with smoke shell ammunition capabilities listed on the 'ammo' column of the HPT. (Specifically: British Crusader C.S., Italian Semovente, German Pzkw IVe and 75mm LIG, and ALL medium mortars).

b. Smoke shells are fired indirectly during the indirect fire phase in exactly the same manner as HE rounds except they are fired at hexes instead of individual target units.

c. Smoke shells, unlike HE indirect fire, may be fired adjacent to hexes occupied by friendly units. They may also be fired into empty hexes.

d. Smoke shell fire is indicated by placing a smoke shell counter in each target hex.

e. Duration—Each off-board battery or on-board unit may fire smoke into one hex per turn. The DURATION of this smoke depends upon the type of weapon firing it:

1) Smoke fired from OFF-BOARD batteries lasts for TWO turns. When fired, a smoke counter is placed face-up in the target hex. At the beginning of each turn, all face-up smoke counters on the mapboard are inverted to display the '2' on the reverse side.

2) Smoke fired from ON-BOARD units lasts for ONE turn. When fired, an inverted smoke counter, displaying the '2', is placed in the target hex.

3) At the beginning of each turn, all inverted smoke counters displaying a '2' are removed from the mapboard.

f. Effects—When fired into a hex, smoke completely blocks the line-of-fire into or out of that hex. Fire within a hex (melee for example) is unaffected.

1) Smoke completely blocks the line-of-fire passing through the target hex. If the line-of-fire from a firing unit to a target intersects a smoke hex, all fire from the firing unit to the target unit is completely blocked.

2) NOTE: Off-board artillery may still fire into a hex containing smoke, but only if the target hex was acquired BEFORE it was obscured by smoke. In other words, an off-board battery firing smoke into a hex may subsequently fire HE into it.

2. Registrations, Concentrations, and Barrages—In prepared positions, supporting artillery batteries often used pre-determined fire patterns, plotted on maps, to bring fire onto a target. By using these pre-determined map references, artillery fire was brought down on a location immediately without the necessity of the long drawn out acquisition procedure:

a. Before play begins, players secretly record the locations of their registrations, concentrations, and barrages by writing the grid coordinates of the target hexes on the Artillery Indirect Fire Roster, on the same line as the off-board battery to which they belong. The number of pre-determined fire locations available is listed on the Available Forces section of each scenario. Where none are listed, the artillery batteries may only use 'acquired' fire procedures.

b. Distribution—Each off-board battery may be assigned a maximum of ONE barrage location. Registration and concentration locations, however, may be divided among the batteries in any manner; a single battery may be assigned any number of available locations.

NOTE: Once the locations have been assigned, they may not be changed or transferred between batteries.

c. Usage and Effects—Whenever enemy units end their movement segment within a registration, concentration, or barrage location, the proper off-board artillery battery may fire at any of those units during the indirect fire phase of the same turn. One battery may only fire at one target unit per turn:

1) Registrations allow an off-board battery to immediately fire at enemy units ON OR WITHIN ONE HEX OF their recorded hex locations. No acquisition fire procedure is needed.

2) Concentrations function exactly like registrations. In addition, any target directly on the concentration hex location is subject to DOUBLE the fragmentation factors that the battery's fire would normally produce. Direct hit dice rolls are unchanged.

3) Barrages allow immediate fire to be brought on enemy units directly on the barrage hex location. In addition, the target unit is subjected to FOUR times the normal fragmentation factors that the battery's fire would normally produce, AND direct hits are rolled for TWICE. SPECIAL: Each barrage must be located within four hexes of a friendly unit's set up position at the beginning of the game.

d. Shifting Fire: Once a target unit has been fired upon by either a registration or concentration, such fire may shift with the target up to two hexes per turn provided that the fire acquisition is maintained in the next immediate indirect fire phase. Shifting is conducted in the same manner as regular acquired indirect fire shifting. Such subsequent fire is treated as normal off-board artillery fire with no increase in fragmentation factors or direct hit dice rolls. NOTE: Barrage fire may NOT shift with the target.

3. Collateral Damage—'Collateral damage' may be incurred by any other personnel units occupying the same hex as a target unit undergoing any type of INDIRECT FIRE. These units are INDIVIDUALLY subjected to one-quarter (1/4), rounded down, of the fragmentation factors suffered by the target unit. One die is rolled for each unit unless it is in a full cover state in which case it is immune to collateral damage. Direct hits are not rolled on 'collateral' targets.

4. AFV Visibility Restrictions from Fire—AFV's undergoing HE fire are usually forced to close their hatches to avoid fragmentation casualties and thus severely limit their visibility. This directly affects their ability to acquire new targets:

a. Whenever an AFV is fired upon by HE ammunition, either direct or indirect, it may not use its initial rate-of-fire when acquiring new targets in the same combat segment. The target becomes acquired, but no rounds are fired at it.

b. In the next turn, the target may be fired upon using the full, acquired, rate-of-fire. AFV's that are already acquired on a target are unaffected.

c. In a similar way, an AFV fired upon by a minimum of 30 gunfire factors also has no initial fire at new targets.

STOP! READ NO FURTHER. PLAY SCENARIO SIX.

VII. RULES FOR SCENARIO SEVEN—'CRISIS AT KNIGHTSBRIDGE'

A. DESCRIPTION

The rules for scenario seven, although short, contain several additions that will drastically alter direct fire effectiveness by examining the mechanics of target acquisition:

B. COMBAT ADDITIONS:

1. Target Sizing—Direct fire hit probabilities as heretofore given have ignored the size of a target as an element of weapons effectiveness and accuracy. Obviously, the smaller a target's profile, the more difficult it is to hit. Conversely, large targets, like the 88mm FLAK, are easier to hit. The following chart indicates HIT PROBABILITY NUMBER modifications that must be made when any type of direct-fire weapon fires at one of the listed targets. The number in the right columns must be added/subtracted to the Hit Probability Number along with any other modification due to target movement, target aspect, wrecks, etc.

TARGET TYPE	TARGET COVER STATE	
	in the open	in a weapon pit
British:		
Carrier	+2	cannot be hit
Light truck	+1	+2
Quad	0	+1
ACV	−1	0
Stuart	+1	hull defilade
Crusader	0	hull defilade
Matilda	0	hull defilade
Valentine	0	hull defilade
Grant	−1	hull defilade
2-pder ATG	+1	+2
6-pder ATG	+1	+2
75mm (f) ATG	+1	+2
40mm Bofors	0	+1
25-pder	0	+1
German:		
staff car	+3	cannot be hit
light truck	+1	+2
medium truck	0	+1
250/1	+1	+2
251/1	0	+1
Sd. Kfz. 7	0	+1
Pzkw IIIh	0	hull defilade
Pzkw IIIj	0	hull defilade
Pzkw IVe	0	hull defilade
Marder III	0	hull defilade
75mm LIG	+3	+4
28/20 PAK	+4	+5
50mm PAK	+2	+3
88mm FLAK	−1	0
Italian:		
M13/40	+1	hull defilade
Semovente	+1	lower hull defilade
20mm Breda	+3	+4
47mm ATG	+2	+3

a. This chart supersedes previously listed modifications for 88mm and units in weapon pits.

b. Medium weapons (machine guns and mortars) have +4 added in the open and +5 when in weapon pits.

c. Units indicated as 'cannot be hit' can only be fired upon at a range of one hex or less.

d. At ranges of one hex or less, do not ADD anything to the HPN for Target Sizing against targets in the open or in weapon pits.

2. Target Aspect—When firing at target vehicles showing a FLANK aspect to the firing unit, '1' is SUBTRACTED from the Hit Probability Number required to hit it. This is in addition to any other modifications.

3. Burst on Target (BOT)—The Hit Probability Number reflects the probability of hitting the target on the first round fired. This probability changes very little until the target is actually hit, whereupon it drops drastically. To simulate this, whenever a target is hit with direct fire or mortars, SUBTRACT '3' from the Hit Probability Number of all SUCCEEDING rounds for the remainder of the time that the weapon continuously fires at that target (i.e., maintains acquisition). No more than '3' is ever subtracted for BOT regardless of how many times the target is subsequently hit. If the firing units loses acquisition on that target, the BOT subtraction is lost until the target is once again hit.

STOP! READ NO FURTHER. PLAY SCENARIO SEVEN

VIII. RULES FOR SCENARIO EIGHT—'BIR HACHEIM: THE FALL OF POINT 186'

A. DESCRIPTION

Scenario eight broadens the application of off-board artillery within game situations, introduces STUKA dive-bombers, and adds several more 'detail' rules to the combat system:

B. ARTILLERY FORWARD OBSERVERS

Forward observers are artillery officers attached directly to fighting units for the purpose of directing and adjusting off-board artillery fire onto targets:

1. One Forward Observer (FO) counter must be provided for each off-board battery listed in the Available Forces section of each scenario. One FO is permanently assigned to each battery by writing the FO's ID number in the space provided on the Artillery Indirect Fire Roster.

2. Forward observer units are not listed on the Infantry and Crew Roster because they consist of only a single individual. They fire and melee as 'one man' HQ groups. They do not, however, affect the morale of other units in any way.

3. Off-board artillery batteries may only fire if their assigned FO's are physically on the mapboard. Off-board artillery batteries may only acquire targets that can be 'seen' by their forward observers.

a. Forward observers have a maximum 'sighting range' of 40 hexes. An FO may adjust its artillery battery's fire onto any target within this range provided no smoke or wreck counters intersect the line-of-sight (which is exactly equal to the line-of-fire) from the FO to the target unit.

b. If the line-of-sight is obstructed by smoke or wreck counters, or the target is more than 40 hexes away, the FO's artillery battery may not acquire that target.

c. If the line-of-sight becomes obstructed after the target has been acquired, the artillery battery may still fire into that hex, but it may not change targets or shift its fire out of that hex until the line-of-sight becomes unobstructed.

d. If the FO is eliminated in combat, its off-board battery may not fire for the remainder of the game.

4. Forward observers must be stationary to observe their targets. They may not move and observe targets in the same turn. If they move, their artillery battery's acquisition is not necessarily lost; it simply cannot shift its fire until the FO is stationary.

5. Additionally, FO's may be assigned to observe fire from inside vehicles. They may observe from inside a vehicle, without unloading, providing the vehicle remains stationary. When observing from AFV's (a common practice of both sides), the FO counter is removed from the mapboard and a notation of which AFV is carrying it is recorded on the Target and Damage Roster.

a. If the AFV suffers crew casualties, the FO is assumed to be the last man hit. (He represents an extra man within the AFV above and beyond the regular compliment of men).

b. When an FO is adjusting fire from inside an AFV, it may not move or fire its turret weapons.

c. If the AFV is K-killed and/or the crew bails out, the FO counter must be returned to the mapboard and placed in the hex occupied by the AFV.

6. When using the Khamsin (dust storm) rule, the FO's sighting range is five hexes.

C. STUKA DIVE-BOMBERS

The Junkers JU-87 'Stuka' dive-bombers were the 'flying artillery' of the Luftwaffe. For those scenarios in which they appear, apply the following rules:

1. Movement—Stuka aircraft have a movement allowance of 26 hexes per turn. They move during the movement segment. Unlike other units, Stukas have certain restrictions placed upon them:

a. Stukas must expend their ENTIRE movement allowance each turn.

b. They expend one movement point for each hex entered in non-diving movement.

c. Stukas may pivot through any number of hex sides in one hex at NO COST to their movement allowance.

d. No Stukas may pass through the same hex twice in the same movement segment.

e. Stuka aircraft have unlimited stacking.

2. Entry—Stuka aircraft may enter the game during any movement segment. Once entered, however, a Stuka may not remain on the mapboard for more than TEN turns without performing a dive-bombing attack. After expending all of its bombload, a Stuka must exit the mapboard by the most direct route in the shortest time possible.

3. Stukas must enter the mapboard in groups of THREE's. More than one group may be on the mapboard at one time, but individual aircraft may not enter and exit randomly. Each aircraft may attack a different target and exit the mapboard individually, however.

4. Bombload—Each Stuka carries ONE 500-kilogram bomb and FOUR 50-kilogram bombs. In a given dive-bombing attack, either the single large bomb, or all four smaller bombs, or all five bombs may be dropped. Therefore, each aircraft may make, at most, two dive-bombing attacks per game. Each aircraft may only attack one unit per combat segment.

5. Dive-bombing—Aircraft execute dive-bombing missions by moving to the intended target unit's hex, 'diving', and then announcing the type of bombload dropped. A 'dive' expends 20 of the Stukas 26 movement points. Therefore, a Stuka must move six hexes before entering its intended dive hex.

a. The results of a Stuka's dive-bombing attack are evaluated during the indirect fire phase BEFORE any other type of indirect fire is evaluated. Direct hits and fragmentation are evaluated on the Off-board Direct Hit and Fragmentation Table in exactly the same manner as off-board artillery fire. For rules purposes, treat all direct hits from bombs as hits from weapons larger than 105mm.

b. Roll direct hits for the 500 kg. and the 50 kg. bombs separately, regardless of whether they are dropped together. Evaluate EACH 50 kg. bomb individually.

c. Bomb fragmentation factors may not be combined with fragmentation factors from other indirect fire attacks, although they may be combined with bombs from other Stukas.

6. Regardless of the damage inflicted on the target unit, a Stuka dive-bombing attack forces ALL crewed-weapon units in the target hex to cease fire for that turn. Acquisition on targets being engaged is lost and must be re-acquired. AFV, light infantry weapon and pesonnel unit gunfire are unaffected.

7. Stukas may not initiate dive-bomb attacks in hexes containing friendly units. They may, however, dive bomb targets ADJACENT to friendly units.

D. NEW UNITS

1. French 75mm ATG—The units involved on the British side in scenario eight are in actuality Free French units. The 75mm gun was their basic anti-tank and field gun ordnance. The 75mm (f) has a field-of-fire consisting of its front three hex sides.

2. British Bofors 40mm AA—The Bofors was the classic anti-aircraft weapon of World War II. It had a multiplicity of uses which included AP and HE capabilities.

a. The Bofors has an all-round field-of-fire.

b. It functions normally, (except for an incredibly high ROF) when firing AP or HE ammunition.

c. The Bofors also has an anti-aircraft capability for use against Stuka dive-bombers.

1) A Bofors AA may attempt to shoot down any Stuka which flies within its AA-RANGE, which, by definition, is FIVE HEXES. One weapon may fire at any number of aircraft during one movement segment whenever they fly within its AA Range. One gun may fire at a particular aircraft only once per turn, however.

2) AA dice rolls are executed immediately whenever an aircraft flies within a weapon's AA Range. A dice roll of '2' or '4' will destroy a Stuka. Destroyed Stukas do not execute bombing missions in that turn and are simply removed from the mapboard.

3) Weapons that fire during the movement segment may not fire in the combat segment of the same turn.

3. German 251/1 and 250/1 Halftracked Armored Personnel Carriers—The medium 251/1 and the light 250/1 were the basic armored personnel carriers (APC) of the German forces in the desert.

a. Transportation capacities of these vehicles are indicated on the Transport Capacity Table previously presented.

b. 251/1 APC—The 251/1 is equipped with two MG34 machine guns that have an all-round field-of-fire. Note, however, that they may be operated only by personnel units being transported. At least one man must be present to operate each machine gun. When operating machine guns, personnel units are assumed to be in GOOD cover; otherwise, they are all in full cover. Machine guns may not be fired if the vehicle moves, nor during turns in which passengers are loaded or unloaded.

c. 250/1 APC—The 250/1 is similar to the 251/1, except that it is equipped with only one MG34 machine gun. Rules for its operation are the same as for the 251/1.

E. COMBAT ADDITIONS

1. Weapon Hits ≤ 40mm—Heretofore, it has been assumed that any direct hit upon a weapon unit by any type of weapon F-killed the target weapon. In reality, however, this is not always the case with smaller caliber weapons. To better represent what actually happens, employ the following rules when evaluating direct fire AP or HE hits from weapons of 40mm or less. (Specifically: 2-pder, 37mm, 40mm, 20mm, 28/20 PAK's, and ATR's).

a. When hit by one of the above-mentioned weapons, crew casualties and damage to the weapon are evaluated separately.

b. For weapon damage, roll two dice for EACH hit and refer to the Direct Hit on Weapons ≤ 40mm chart on the back of the HPT card. An 'x' result means that the weapon has been F-killed. A non-'x' result means the weapon is undamaged. Also, any weapon hit but no F-killed may not fire in that turn (unless it has already done so).

c. Crew casualties are incurred regardless of whether the weapon is F-killed. Evaluate casualties on the Casualty Table as per the fragmentation factors produced by all of the impacting HE rounds or at the rate of one fragmentation factor for each AP hit.

d. SPECIAL—When using this chart, crew casualties are evaluated as being in RUNNING cover regardless of their actual cover state.

2. Off-Board Counter-Battery Fire—An important task of heavy artillery is counter-battery fire in which friendly batteries fire at enemy batteries in an attempt to inhibit or interrupt their fire.

a. Counter-battery fire is initiated by off-board artillery batteries against enemy off-board batteries during the

indirect fire phase. A forward observer need not be present on the mapboard for its battery to engage in counter-battery fire.

b. IMPORTANT: Only certain types of batteries may engage in counter-battery fire against certain types of enemy batteries (which is dependent upon their maximum ranges). Consult the Off-Board Counter-Battery Matrix (located on the Casualty Table card) to determine which types may conduct counter-battery fire against specific enemy batteries.

c. Counter-battery fire does not destroy enemy off-board batteries, but rather neutralizes them so that they cannot fire. The procedure for neutralization is as follows:

1) Enemy batteries must be located before they may be counter-batteried. Only enemy batteries that fire during a turn may be located in that turn. Locating attempts are conducted at the end of the indirect fire phase in which the enemy battery fires. To attempt to locate an enemy battery, roll one die for each enemy battery that fired. A die roll of '1' means that the enemy battery has been located. Once located, an enemy battery remains located for the remainder of the game.

2) Once located, counter-battery fire may be initiated against that battery any time thereafter. Counter-battery fire requires the normal four-turn acquisition procedure. At the beginning of the fourth turn, the enemy battery is neutralized and may not fire.

d. Enemy batteries remain neutralized for as long as the counter-battery fire is maintained and for SIX turns after it is ended. That is, if a battery ceases counter-battery fire, the target battery may not resume acquisition procedure until seven turns later. If the friendly battery resumes fire on the enemy battery, it must re-acquire that target battery again.

e. It is strongly recommended that players make appropriate notations on their roster sheets in regards to location, acquisition, and neutralization of enemy batteries to avoid confusion.

F. FIELD EMPLACEMENTS: BUNKERS

Bunkers are basically small weapon pits covered with reinforced, timbered roofs. They function like weapon pits with these differences:

1. Each bunker may only hold one medium machine gun and crew or personnel units (and their light weapons) totalling no more than eleven men.

2. Units inside a bunker are assumed to be in a FULL COVER state. They may fire out of a bunker while under this full cover state. Mortars may not fire from bunkers.

3. A bunker is destroyed (and the units inside reduced from full cover to stationary cover) by any direct hit with HE ammunition from any weapon of 75mm or larger; either by direct or indirect fire.

4. When destroyed, a bunker counter is removed from the mapboard. Any weapon units inside the bunker are also destroyed. All personnel units undergo fragmentation casualties from the round fired that destroyed the bunker (and any subsequent rounds fired) in a stationary cover state.

5. SPECIAL: Enemy units occupying the same hex as a friendly bunker reduce the cover state of any units inside the bunker to GOOD cover to their fire only.

6. Like weapon pits, '2' is added to the Hit Probability Number of all direct fire weapons when firing at bunkers, except at ranges of one hex or less.

7. Enemy units may not enter a bunker that is already occupied by friendly units. Friendly units occupying a bunker are not required to melee enemy units, but may do so at their option.

G. OPTIONAL RULES

1. Grenades—All infantry units (including HQ groups) carry hand grenades. Grenades may only be used against enemy units occupying the same hex. Note, however, that they may be used as a 'Final Fire' in melee situations.

a. Each man available in a personnel unit is assumed to throw one grenade per turn. Each grenade produces FIVE fragmentation factors which are evaluated in the same manner as other fragmentation with the added benefit that grenades always reduce GOOD or FULL cover to STATIONARY cover. This reduction also applies to targets inside bunkers although the bunker itself is not destroyed. Marder III crews may similarly be attacked with grenades.

b. There is no collateral damage associated with grenades except for units inside bunkers.

c. Units throwing grenades may not operate weapons or fire their own small arms in the same turn. If a personnel unit throws grenades, ALL men in that unit must throw grenades. (A unit's function cannot be split between firing weapons and throwing grenades.)

2. HQ Groups as Forward Observers—HQ groups may conduct limited FO functions. HQ groups may call in BARRAGE locations for artillery fire even if the battery has no forward observer on the mapboard. This barrage fire may not shift, but is limited to the hex location initially recorded for that battery. One HQ group may call in barrages for more than one off-board artillery battery.

3. Interceptors—Throughout the Gazala battles, the Luftwaffe was never able to establish air superiority. Thus, ground support operations were never free from possible interference from British fighter aircraft. To represent this problem, roll one die for EACH THREE-AIRCRAFT GROUP entering the game. A die roll of '1' means that the group of Stukas has been intercepted enroute to the target and may not enter the game.

STOP. READ NO FURTHER. PLAY SCENARIO EIGHT.

IX. RULES FOR SCENARIO NINE—'TOBRUK FALLS'

A. NEW UNITS

1. Dummy Gun Positions—It was common practice for both sides to erect fake gun positions as a ruse to draw enemy fire. When placing crewed-weapon units on the mapboard, position them face-down so that their gun symbols are exposed. Also, place each side's allotted number of dummy counters face-down on the mapboard. The identity of dummy gun positions need only be revealed if an enemy unit moves within one hex of their location, or whenever they suffer a direct hit which would F-kill a real unit. Once revealed, they are removed from the mapboard. Dummy counters may be voluntarily removed from the mapboard by the owning player at any time.

2. British Armored Command Vehicle (ACV)—This vehicle is a wheeled armored personnel carrier. Each ACV may carry up to eight men who are considered to be in FULL cover when being transported. ACV's carry no armament.

3. Bren Carriers—In addition to the Boys ATR, each Carrier also mounts one Bren light machine gun which produces gunfire factors as shown on the MACHINE GUN section of the British HPT. Both weapons may be fired simultaneously and independently. Also, the Boys ATR may be removed from the Carrier and used by any personnel unit. If the Carrier is K-killed, all weapons are assumed to be destroyed. Record must be maintained as to which ATR's are removed from which Carriers.

B. COMBAT ADDITIONS

Moving Machine Gun Fire—AFV's and other machine gun armed vehicles may move and fire their machine guns in the same turn. Machine gun fire from moving vehicles is evaluated at HALF normal gunfire factors. Machine Gun fire may be used as 'final fire' for AFV's conducting overruns.

C. FIELD EMPLACEMENTS

1. Blockhouses—In scenario nine, bunker counters represent blockhouses which were concrete defensive structures built by the Italians.

a. Only one blockhouse may be placed in each hex. Blockhouses may not be placed in hexes with any other type of field emplacements.

b. Each blockhouse may hold up to 30 men and their light infantry weapons.

c. Units in blockhouses are considered to be in FULL cover. Units outside of blockhouses, in the same hex, accrue no defensive advantages.

d. Unlike bunkers, no units of any type may fire from blockhouses.

e. A blockhouse is destroyed (and the units occupying it have their full cover state reduced to stationary cover) by any direct hit by HE ammunition from weapons LARGER THAN 105mm. (That is: 4.5-inch howitzer, 149mm howitzer, 150mm gun-howitzer, 155mm howitzer, and any bomb). When destroyed, the blockhouse counter is removed from the board and the personnel units inside undergo fragmentation casualties from the impacting rounds in the stationary cover state.

f. Units in blockhouses cannot melee.

g. Units may move from inside a blockhouse to the outside only during the movement segment. Units in the same hex as a blockhouse may NOT 'drop' into full cover (i.e., move inside the blockhouse) at any other time except during the movement segment.

2. Anti-Tank Trenches—Anti-tank (AT) trenches are steep-sided ditches used to block vehicular movement.

a. Only one AT trench may be placed in each hex. AT trenches may not be placed in hexes with any other type of field emplacements.

b. No vehicular units of any type may enter hexes containing AT-trenches.

c. AT-trenches also act as hedgehog counters for personnel units and light weapons. They function exactly like regular hedgehog counters in this respect.

D. OPTIONAL RULE

Dummy Minefields— Quite often during the desert war, dummy minefields (marked fields containing no mines) would be laid between real ones to increase the coverage of available mines. To simulate this, designate 20% of the minefield counters specified in the 'Available Forces' section of the scenarios as dummy minefields and deploy them on the mapboard. Secretly record the exact grid coordinates of all dummy minefields. If enemy units attempt to force a dummy minefield, the true nature of the minefield counter must be revealed only if the forcing attempt is unsuccessful. All subsequent units moving through a dummy minefield must still move at the rate of one hex per turn.

○ ○ ○

THE SCENARIOS

A. Each of the nine scenarios is a complete game depicting a facet of the actual Gazala battle. The scenarios progress in a basically chronological order to trace the development of the campaign from scenario one through scenario nine. Each scenario is keyed to a corresponding rules section within the main body of the rules as explained in the introduction. Scenarios are organized in the following format:

1. Historical Capsule: Briefly states the action, when and where it occurred and which units were involved.

2. Available Forces: Illustrates units utilized for each side by the use of unit counter diagrams. Whenever a number preceded by a multiplication sign appears below a unit's picture (e.g., '×3'), the side in question receives the stated quantity of that particular unit type. Note that infantry and off-board artillery batteries are not illustrated by diagrams. For infantry, higher echelon formations (company, platoon, etc.) will be indicated, in which case all of the infantry units composing that formation will be used. Off-board artillery batteries are simply listed by name and number of batteries available. NOTE: Crews for weapon units are not listed individually, but one full strength crew of the proper size is assumed to be a part of any crewed-weapon unit listed in the available forces section.

3. Set Up: States the order in which each side sets up its units, lists placement restrictions and the order of movement.

4. Game Length: States the number of turns in the particular scenario.

5. Special Rules: Rules applicable ONLY to the scenario in question are outlined in this section.

6. Victory Conditions: Provides criteria for assessing victory; either in terms of geographical position/control, or in terms of 'victory points' for units damaged, destroyed, or captured.

7. Definition: For victory condition purposes, a side controls a hex if at least one friendly personnel or non-K-killed, non-bailed out vehicle unit occupies it, free of any enemy personnel or functioning vehicle units.

B. GENERAL RULES FOR MAPBOARD ENTRY, EXIT, AND PLACEMENT

1. The mapboard is divided into six sections identified by the letters A through F and delineated by grey hex rows. These sections define the area of play, set up limitations, and mapboard entry locations.

a. Units indicated as setting up within a section may not be placed on or outside of the grey hexes bordering that section. When the indicated set up area encompasses more than one section, the 'interior' (non-border) grey hexes may be used.

b. Units indicated as entering the mapboard from a section edge may not enter on or outside of the grey hexes bordering that section. As above, interior grey hexes may be used.

2. Units indicated as setting up prior to the commencement of play MUST be placed on the mapboard in their proper set up areas.

3. Units indicated as entering the mapboard on the first turn of the game MUST enter at that time.

4. Units indicated as entering the mapboard after turn one may enter during, or any turn after, their scheduled turn of entry. Their utilization is optional; they are not required to enter the game.

5. Units may exit the mapboard at any time after their turn of entry. Once exited, however, they may never return.

6. Units entering the mapboard are assumed to be moving at the rate of at least one hex per turn.

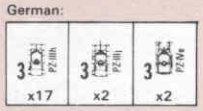
SCENARIO ONE— 'THE CLASH OF ARMOR'

27 May 1942: "B" Squadron of the 4th Armoured Brigade's 3rd Royal Tank Regiment face German panzers of the 5th Panzer Division.

AVAILABLE FORCES:

British:

German:



SET UP:
British: Set up first, anywhere within board sections A and B.
German: Enter on turn 1, anywhere on east edge of mapboard. Move first.

GAME LENGTH: 30 turns.

VICTORY CONDITIONS:
British: Accumulate as many or more victory points than the German player at end of game.
German: Accumulate more victory points than the British player at end of game.
VICTORY POINTS are awarded for damage inflicted on enemy tanks as follows:

British player receives:
—For each Pzkw IIIj K-killed: 3 points.
—For each Pzkw IIIh or Pzkw IVe K-killed: 2 points.
—For each German tank M- or F-killed: 1 point.

German player receives:
—For each British tank K-killed: 3 points.
—For each British tank M-killed: 2 points.
—For each British tank F-killed: 1 point.

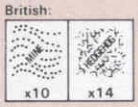
NOTE: Points may be received for both M- and F-kills on the same tank. Any tank K-killed however, receives only the K-kill points. Grant tanks may be assessed points for only one F-kill on each.

SCENARIO TWO— 'THE GROUP CRUWELL FEINT'

26 May 1942: Elements of the 2nd South African Brigade defend against a feint by sub-units of the Italian "Sabratha" Infantry Division and German 15th Rifle Brigade.

AVAILABLE FORCES:

British:



- All 'Company HQ' and 'First Platoon' units.

German:

- All 'First Platoon' units.

Italian:

- All 'Company HQ' and 'First Platoon' units.

SET UP:

British: Set up first anywhere within section B; within five hexes of the east edge of section B.
German and Italian: Enter on turn 1, anywhere on the east edge of section C. Move first.

RESTRICTIONS: Use only board sections B and C.

GAME LENGTH: 30 turns.

SPECIAL RULE: No minefield counters may be placed within three hexes of the north or south edges of section

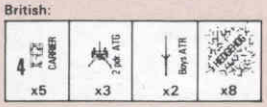
VICTORY CONDITIONS:
Axis: Control at least seven hedgehog counters simultaneously, free of enemy units, for one complete turn before the end of turn 30.
British: Avoid Axis victory conditions.

SCENARIO THREE— 'ACTION AT POINT 171'

27 May 1942: Elements of the Italian "Ariete" and German 15th Panzer Divisions attempt to overrun sub-units of the King Edward's own Cavalry Regiment at Point 171.

AVAILABLE FORCES:

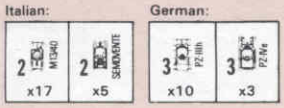
British:



- All 'Company HQ,' 'First Platoon' and 'Second Platoon' units.

Italian:

German:



SET UP:
British: All units, EXCEPT Carriers, set up first anywhere within section B. Carriers enter turn 20, anywhere on west edge of section A.
Italian: Enter on turn 1, anywhere on east edge of section C. Move first.
German: Enter on turn 20, anywhere on east edge of section C.

RESTRICTIONS: Use only board sections A, B, and C.

GAME LENGTH: 40 turns.

VICTORY CONDITIONS:
British: Accumulate as many or more victory points than Axis player at the end of the game.
Axis: Accumulate more victory points than the British player at the end of the game.
VICTORY POINTS are awarded as follows:
British player receives:
—For each Axis vehicle K-killed: 10 points.
—For each Axis vehicle M- or F-killed: 5 points.
—For each undamaged Italian AFV on the mapboard AFTER turn 25: 4 points.
Axis player receives:
—For each British vehicle K-killed: 2 points.
—For each ATG destroyed: 5 points.
—For each gun crew completely destroyed: 3 points.
—For each infantry unit completely destroyed: 2 points.

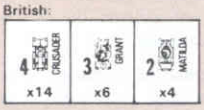
SPECIAL RULES: Italian units may only exit from west edge of board.

SCENARIO FOUR— 'THE PANZER THRUST IS SLOWED'

27 May 1942: Panzers from the 21st Panzer Division pursuing the 22nd Armoured Brigade are struck on both flanks by elements of the 44th Royal Tank Regiment from the east and 2nd Royal Tank Regiment from the west.

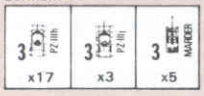
AVAILABLE FORCES:

British:



- Off-Board Artillery: TWO 25-pder batteries.

German:



SET UP:

German: All units enter turn 1, anywhere on east edge of mapboard between hex rows 'O' and 'W', inclusive. Move first.

British: All Grant and Crusader tanks enter on turn 6, anywhere on north edge of mapboard. All Matilda tanks enter on turn 8, anywhere on south and/or west edge of section D.

GAME LENGTH: 40 turns.

VICTORY CONDITIONS:

British: Accumulate more victory points than Germans at end of game.

Germans: Accumulate as many or more victory points than British player at end of game.

VICTORY POINTS are awarded as follows:

British player receives:

- For each German AFV K-killed: 5 points.
- For each German AFV M- or F-killed: 2 points.
- For each German crew casualty: 1 point.

German player receives:

- For each Grant or Matilda K-killed: 5 points.
- For each Crusader K-killed: 3 points.
- For each M- or F-kill: 1 point.
- For each British crew casualty: 1 point.

SPECIAL RULE:

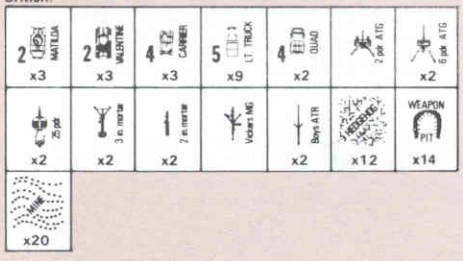
German vehicles must move in a straight path, east to west, at full speed across the mapboard until the first British units enter the mapboard. After British units enter, German units are free to move normally. Also, British units scheduled to enter on turn six MUST enter during that turn and no later.

SCENARIO FIVE— 'DESTRUCTION OF THE 150th BRIGADE'

Late May—2 June 1942: Sub-units of 104th Panzer Grenadier Regiment, supported by elements of the 21st Panzer Division, conduct a final assault against battered sub-units of the 5th Battalion of the Green Howards of the 150th Brigade in "The Cauldron."

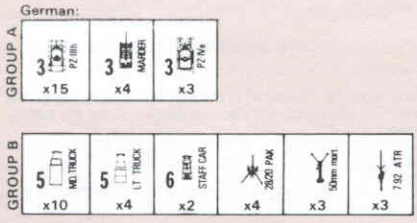
AVAILABLE FORCES:

British:



- All 'Company HQ,' 'First Platoon,' and 'Second Platoon' units.
- Off-Board Artillery: TWO 25-pder batteries.

German:



- One complete German infantry company.
- Off-Board Artillery: TWO 105mm howitzer batteries. TWO 150mm howitzer batteries.

SET UP:

British: Set up first, anywhere within A, D, and E.

German: Group A-Enter turn 1, on north or east edge of section C. Move first. Group B-Enter on turn 15, on east edge of section C.

GAME LENGTH: 40 turns.

VICTORY CONDITIONS:

German: Control at least 20 hexes containing hedgehog or weapon pit counters at the end of the game.

British: Avoid German victory conditions.

SPECIAL RULES:

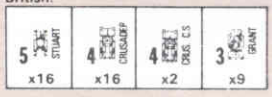
All minefield counters must be placed within two hexes of the eastern border of the British set up area.

SCENARIO SIX—'ABERDEEN'

5 June 1942: Elements of the British 22nd Armoured Brigade assault the anti-tank screen of the Afrika Korps Army Headquarters, with counter attacks by elements of the 21st Panzer Division.

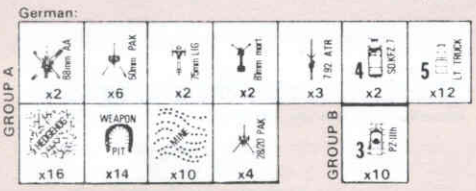
AVAILABLE FORCES:

British:



- Off-Board Artillery: TWO 25-pder batteries. ONE 4.5-inch battery.

German:



- One complete German infantry company.
- Off-Board Artillery: ONE 105mm howitzer battery. ONE 150mm howitzer battery. TWO 105mm gun batteries. (PLUS: 4 barrages, 16 concentrations, and 4 registrations.)

SET UP:

British: Enter on first turn, anywhere on north edge of mapboard. Move first.

German: Group A: Set up first, anywhere south of hex row W, inclusive.

Group B: Enter on turn 15, anywhere on south or east edge of section D.

GAME LENGTH: 40 turns.

VICTORY CONDITIONS:

British: Accumulate as many or more victory points than the German player at the end of the game.

German: Accumulate more victory points than the British player at the end of the game.

VICTORY POINTS are awarded as follows:

British: player receives:

- For each non K-killed AFV south of hex row W (inclusive) at end of game: one point.
- For each AFV exited off south edge of mapboard before the end of the game: 3 points.
- For each German weapon crew completely eliminated: two points.

German player receives:

- For each British AFV K-killed: two points.
- For each British AFV M- or F-killed: one point.
- For each British C-casualty: one point.

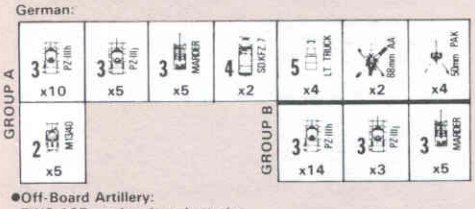
SCENARIO SEVEN— 'CRISIS AT KNIGHTSBRIDGE'

12 June 1942: Sub-units of the 15th Panzer Division and 21st Panzer Division strike back against elements of the 2nd Armoured Brigade at Knightsbridge.

AVAILABLE FORCES

British:

German:



- Off-Board Artillery: TWO 105mm howitzer batteries. ONE 150mm howitzer battery.

SET UP:

British: Set up first, anywhere in section B, SOUTH of hex row O, and section E, anywhere NORTH of hex row W, inclusive.

German: Group A: Enter turn 1, anywhere on west or south edge of section D. Move first.

Group B: Enter turn 10, anywhere on east edge of section C.

GAME LENGTH: 40 turns.

VICTORY CONDITIONS:

German: German player wins if he has a 2-1 ratio of victory points as compared to the British player at the end of the game.

British: British player wins by avoiding German victory conditions.

VICTORY POINTS are awarded as follows:

British player receives:

- For each Axis AFV K-killed: 3 points.
- For each Axis AFV M- or F-killed: 1 point.
- For each Axis crew casualty: 1 point.
- For each 88mm FLAK F-killed: 10 points.
- For each 50mm PAK F-killed: 2 points.

German player receives:

- For each British Stuart or Crusader K-killed: 2 points.
- For each British Grant K-killed: 3 points.
- For each British AFV M- or F-killed: 1 point.
- For each British C-casualty: 1 point.

SPECIAL RULE:

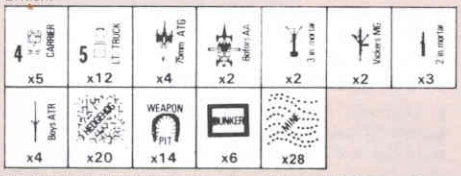
British units may only exit the mapboard from the west edge of section A and/or D. Also, use Khamsin rule from scenario two.

SCENARIO EIGHT— 'BIR HACHEIM: THE FALL OF POINT 186'

9 June 1942: Free French units defend against elements of the German "Gruppe Baade," 15th Panzer Division Panzer Grenadiers and Italian Trieste Division motorized Infantry during the bitter fighting at Bir Hachiem.

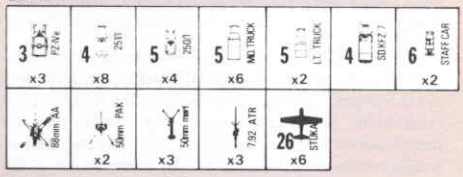
AVAILABLE FORCES

British:



- All 'Company HQ,' 'First Platoon,' and 'Second Platoon' units.
- Off-Board Artillery:
  THREE 75mm(f) batteries.
  (PLUS: 3 barrages, 3 concentrations, and 9 registrations.)

German:



- One complete German infantry company.
- Off-Board Artillery: TWO 105mm gun batteries.
  ONE 150mm gun battery.

Italian:

- All 'First Platoon' and 'Second Platoon' units.
- Off-Board Artillery: TWO 105mm gun batteries.
  ONE 149mm howitzer battery.

SET UP:
British: Set up first, anywhere within section E.
German: Enter turn 1, anywhere on the north or east edge of section C. Move first.
Italian: Enter turn 2, anywhere on the north edge of Section A.

GAME LENGTH: 50 turns.

VICTORY CONDITIONS:
Axis: Control hex DD-32 (which represents point 186) and occupy it with at least one forward observer unit (either German or Italian) at the end of the game.
British: Avoid Axis victory conditions.

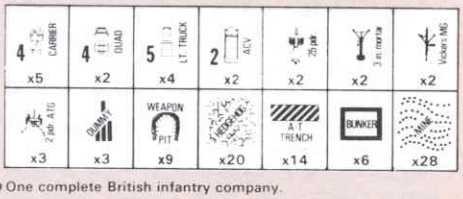
SPECIAL RULES:
1. British player must set up all minefield counters within two hexes of section E's grey border hexes.
2. No British units suffer morale breaks, regardless of their adjusted morale values.

SCENARIO NINE— 'TOBRUK FALLS'

20 June 1942: Sub-units of the 2/5 Maharatta Light Infantry defend Tobruk against elements of the 15th Panzer Division.

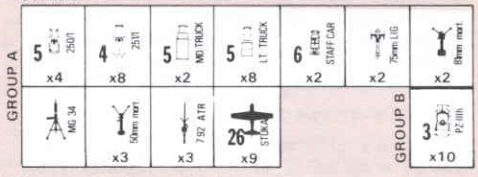
AVAILABLE FORCES:

British:



- One complete British infantry company.
- Off-Board Artillery:
  TWO 25-pder batteries.
  ONE 155mm howitzer battery.
  (PLUS: 2 barrages and 2 registrations.)

German:



- One complete German infantry company.
- Off-Board Artillery:
  TWO 105mm howitzer batteries.
  ONE 150mm howitzer battery.
  ONE 105mm gun battery.
  ONE 150mm gun battery.

SET UP:
British: Set up first, anywhere within section B and or E.
German: Group A: Enter 1, anywhere on east edge of mapboard. Move first.

Group B: Enter turn 15, anywhere on east edge of mapboard.

GAME LENGTH: 40 turns.

VICTORY CONDITIONS:
German: Exit at least 17 vehicles off the west edge of the mapboard before the end of the game. At least five of the vehicles must be Pzkw IIIh.
British: Avoid German victory conditions.

SPECIAL RULES:
1. Minefield counters must be placed on the mapboard in groups of four such that each counter in the group is adjacent to at least one other counter in that group. Minefield counters of one group may not occupy hexes adjacent to minefield counters of other groups. (This will, in effect, create a minimum of seven 'lanes' through the minefield defenses).
2. Anti-tank trench counters may not be placed adjacent to minefield counters.

EXPERIMENTAL RULES

A. DESCRIPTION

The experimental rules are generally of a very complex nature. Some rules provide for functions that, although realistic, occur only occasionally in most game situations. Thus the entire game system is better served by excluding them from the standard rules section. Other rules are also realistic, but their employment requires additional 'function-designation' counters not included in the counter sheet. Still others fall under the category of 'detail' rules for players who thrive on that type of game experience.

The rules may be used or ignored according to individual tastes. To facilitate usage, the rules have been organized into 'modules' which incorporate all the experimental rules applying to a certain type of weapons system or to a certain specific unit function.

B. EXTRA COUNTERS

As mentioned above, certain experimental rules require extra counters not provided in the counter sheet. Essentially, these are 'movement arrow' counters and crew counters. These may be easily made from blank counters. (Sets of extra TOBRUK counters and blank counters may be purchased directly from Avalon Hill. Consult the parts list for current price.)

C. MOVEMENT RULES

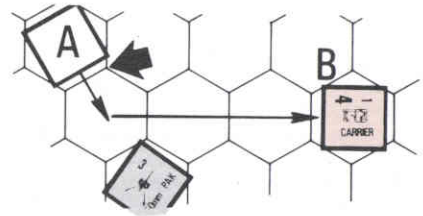
1. Target Motion—In the standard rules, a moving target gets a benefit of '1' to the Hit Probability Number required to hit it. In actuality, this is a very complex problem. The difficulty of hitting a moving target is most affected by the extent of target movement ACROSS the field-of-fire. Movement directly towards or away from the firing unit increases the difficulty in hitting the target very little:

a. Before beginning play, make a quantity of the movement arrow counters described in section B.

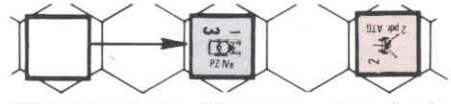
b. When moving a unit through individual hexes, place a movement arrow in each hex passed through such that the arrows indicate the path of movement for that turn. Thus, for example, a unit moving six hexes will have six movement arrows trailing behind it indicating the exact path of movement. They are removed at the end of the turn.

c. When firing at a target, add '1' to the Hit Probability Number for each HEX that the target unit passed through when moving ACROSS the firing units field-of-fire. By way of technical definition, add '1' to the HPN for each hex side crossed that is NOT perpendicular (i.e., at right angle to) to the line-of-fire.

d. When the line-of-fire can be traced through more than one hex side in the FIRING unit's hex, the line-of-fire (which is the 'base line' for perpendicularness) most advantageous to the FIRING unit is used. In most cases, the hex side through which the line-of-fire passes will be obvious.



EXAMPLE: The Carrier moves from A to B during its movement segment. It moved directly TOWARDS the ATG in only one of the hexes it passed through (i.e., it moved through only one hex side perpendicular to the line-of-fire). Therefore, '3' is added to the HPN required to hit it because it moved through three non-perpendicular hex sides.



EXAMPLE: The Pzkw IVe moves two hexes directly towards the ATG. NO additions are made to the HPN for target motion because the target moved only through hex sides perpendicular to the line-of-fire.

e. When using this rule, DO NOT automatically add '1' to the HPN when firing at moving targets as in the standard game.

2. Dust—The area of the Western Desert where the Gazala battles occurred was very dry and very dusty. Vehicles moving across a battlefield raised plumes of dust behind them which caused severe visibility problems:

a. Indicate the path of vehicular movement with movement arrows in the same manner as when using Target Motion rules.

b. Movement arrows for vehicular units represent the dust raised by those units when moving. They are removed at the end of each turn.

c. Dust (movement arrow) counters partially obscure the line-of-fire in the same manner as wreck counters. Add '1' to the HPN for each dust counter obstructing the line-of-fire.

3. Expanded Towing Rules—The towing rules provided in the standard game were admittedly simplistic. The following rules indicate the towing capabilities of each vehicular unit. These rules supersede the standard game towing rules:

a. Any heavy weapon unit or vehicular unit (including K-killed, F-killed, and M-killed units) may be 'hooked up' and towed by vehicular units as indicated on the Towing Matrix. The towing matrix illustrates exactly which vehicles may tow which other units.
fires.

b. Procedure—Loading ('hook up') and unloading ('unhook') procedures are basically the same as used in the standard game with these modifications:

1) Hook up of any vehicle or heavy weapon unit requires TWO full turns in which neither the towing unit nor the unit being towed may move or fire.

EXCEPTION: The following units require FOUR turns to hook up: German 88mm FLAK, British 2-pder ATG, 25-pder artillery, and the Bofors 40mm AA.

2) The hook up procedure may be interrupted by direct fire and resumed again with no loss of the hook up turns already completed. The units involved in the hook up may not fire or move without losing the hook up turns already completed.

3) Units being hooked up are placed UNDER their intended towing unit. Keep a record of elapsed turns on the towed unit's roster entry.

4) To unhook towed units, the towing unit must remain stationary for one full turn without moving or firing. Both units may resume normal function in the following turn.

EXCEPTION: The following units require TWO full turns to unload: German 88mm FLAK, British 2-pder ATG, 25-pder artillery, and Bofors 40mm AA. For these units, the towing vehicle may resume normal function after the first unhooking turn, but the towed weapon cannot fire for an additional turn.

c. Towing any weapon unit, medium or light truck, or staff car is executed at the normal movement rate of the towing vehicle. All other vehicles and AFV's may only be towed at the rate of one hex per turn.

d. Vehicular units may hook up regardless of their apparent facing in respect to the unit being towed. When towed, both units are assumed to have the same facing.

4. Undulating Terrain Cover—Although the desert area in which most of the battles were fought was extremely flat, slight cover could occasionally be found. This was usually a quirk of nature consisting of slight, almost imperceptable, undulations of the ground. This type of terrain feature could only be used to good effect by AFV's when assuming 'hull-down' positions behind them. The sheer randomness of this cover makes it difficult to simulate in the standard game but can be attempted by using these rules:

a. Undulating terrain cover applies to AFV's only.

b For each AFV that moves at least one hex, roll one die at the end of the movement segment. A die roll of '1' means that the AFV has located HULL-DOWN cover.

c. Hull-down cover is the same as hull defilade in weapon pits except that the 'hull defilade' advantage applies only to the FRONT aspect of the target AFV.

d. Indicate the hull-down cover state of an AFV by placing a blank counter on top of it.

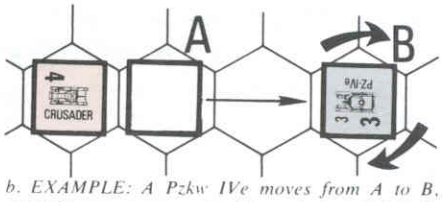
e. Once an AFV leaves a hex in which it had hull-down cover, it may not regain that cover without once again rolling the die.

f. Hull-down cover positions may be passed from one AFV to another providing the new unit enters the hex in the same turn that the other one leaves and it also assumes the same facing as the original unit.

g. Only one AFV at a time may take advantage of undulating cover provided by each die roll of '1'. More than one AFV may be in a hull-down position in a single hex, however.

6. 'Best Aspect' Option—To reduce the effect of the unrealistic tactic of AFV's always turning towards the enemy in their last hex of movement, allow the firing player the following option:

a. If a target unit presents more than one aspect to a firing unit in its FINAL hex of movement, the firing player has the choice of which aspect to fire at on the Area Impacted Table.



b. EXAMPLE: A Pzkw IVe moves from A to B, expending two movement points, and pivots 180° in B, thereby expending a third movement point. If the Crusader fires at the Pzkw-IVe, it could choose to fire at the target using the REAR, FLANK, or FRONT rows on the Area Impacted Table since all three aspects were presented to the Crusader during the target's 180° pivot in B.

c. NOTE: If the target unit only pivots WITHOUT moving out of its initial hex, units firing at it may not use the 'Best Aspect' option.

EXPERIMENTAL RULES TOWING CHART

Vehicle or Weapon Being Towed	Towing Vehicle ("X" Denotes Towing Possible)																		
	Stuart	Crusader	Grant	Valentine	Matilda	Carrier	Quad	ACV	Pz. III (H/J)	Pz. IV	Marder	251/1	250/1	Sd.Kfz. 7	M13/40	Semovente	Staff car	Lt. truck	Med. truck
Stuart	X	X	X	X	X	–	–	X	X	X	–	–	–	–	–	–	–	–	–
Crusader	–	X	X	–	X	–	–	–	X	X	–	–	–	–	–	–	–	–	–
Grant	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Valentine	–	X	X	X	X	–	–	–	X	X	–	–	–	–	–	–	–	–	–
Matilda	–	–	X	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Carrier	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	–	–	X
Quad	X	X	X	X	X	–	X	X	X	X	X	X	–	X	X	X	–	–	–
ACV	–	X	X	–	X	–	–	X	X	X	–	–	–	–	–	–	–	–	–
Pz. III (H or J)	–	–	X	–	–	–	–	–	X	X	–	–	–	–	–	–	–	–	–
Pz. IV	–	–	X	–	–	–	–	–	X	X	–	–	–	–	–	–	–	–	–
Marder	X	X	X	X	X	–	–	X	X	X	X	–	–	X	–	–	–	–	–
251/1	X	X	X	X	X	–	–	X	X	X	X	X	–	X	–	–	–	–	–
250/1	X	X	X	X	X	–	–	X	X	X	X	X	X	X	X	X	–	–	–
Sd.Kfz.7	X	X	X	X	X	–	–	X	X	X	–	–	–	X	–	–	–	–	–
M13/40	X	X	X	X	X	–	–	X	X	X	–	–	–	–	–	–	–	–	–
Semovente	X	X	X	X	X	–	–	X	X	X	–	–	–	–	–	–	–	–	–
Staff Car	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Lt. truck	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	–	X	X
Med. truck	X	X	X	X	X	–	X	X	X	X	X	X	–	X	X	X	–	–	X
2 pder. ATG	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Bofors AA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	–	X	X
6 pder. ATG	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	–	X	X
75mm ATG	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	–	X	X
25 pder ARTY	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	–	X	X
28/20 PAK	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
50mm PAK	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	–	X	X
75mm LIG	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
88mm FLAK	X	X	X	X	X	–	–	X	X	X	X	–	–	X	–	–	–	–	–
20mm Breda	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
47mm ATG	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

D. AFV RULES

1. AFV Crew Counters—For purely detail purposes, players may add crew counters to the game to represent bailed-out AFV crews. This may require the construction of additional crew counters.

a. AFV crew counters are placed on the mapboard whenever a crew bails out or their vehicle is K-killed.

b. AFV crews function in the same manner as weapon crews and other personnel units. A crew roster must be prepared for each crew as it exits its AFV. The roster entry must indicate its current strength minus any casualties suffered.

c. AFV crews may be used to operate weapon units like any other crew units. When firing their personal infantry weapons, they use the CREW listing on their respective Gunfire Factor Table.

2. Ammunition Limits—The standard rules completely ignore the ammunition capacities of individual types of AFV's. Rightly so. Ammunition rules will increase playing time significantly in the larger scenarios. In many engagements, however, ammunition supplies could have serious effects on the final outcome:

a. Ammunition supplies for each type of AFV are as follows:

TYPE	TOTAL number of rounds:	TYPES of ammo carried:	BASE LOAD RESTRICTIONS
British:			
Stuart	103	AP-HE	none.
Grant 75mm	46	AP-HE	none.
37mm	178	AP-HE	none.
Crusader	110	AP	none.
Crusader CS	40	HE-S	30 rds. smoke, minimum
Valentine	60	AP	none.
Matilda	93	AP	none.
German:			
Pzkw IIIh	99	AP-APCR-HE	15 rds. APCR, maximum
Pzkw IIIj	78	AP-APCR-HE	12 rds. APCR, maximum
Pzkw IVe	80	AP-HE-S	40 rds. HE, minimum
Marder III	30	AP-APCR-HE	5 rds. APCR, maximum
Italian:			
M13/40	104	AP-HE	none.
Semovente	44	AP-HE-S	22 rds. HE, minimum

1) TOTAL NUMBER OF ROUNDS refers to the maximum number of rounds of all types that the AFV may carry.

2) BASE LOAD is the total number of rounds carried which may consist of any ratio of ammunition types subject to BASE LOAD RESTRICTIONS. *EXAMPLE: Base Load: A Pzkw IVe may carry a total of 80 rounds, 40 of which must be HE. The German player could choose to complete the base loads of his Pzkw IVe's with 35 smoke and 5 AP rounds for a grand total of 80 rounds.*

3) NOTE: For simplicity, all AFV's of the same type must begin the game with the same base load.

b. Bookkeeping—With a bit of care, bookkeeping for ammunition expenditures is not that cumbersome:

1) On a separate sheet of paper, record each AFV type's base load.

2) On each AFV's ammo box (on the AFV roster) write a small one-letter initial for each type. Mark a tally next to the letter for each round of the proper type fired.

c. During play, the decreasing amount of ammunition for each AFV must be recorded by each player. During the combat segment, players must announce the type of ammunition being fired by each AFV as it fires.

1) APCR rounds may be fired at ANY type of target whenever normal AP rounds are exhausted.

2) HE rounds fired at AFV's have the same effects as previously described for the Crusader C.S.

d. Overload—British AFV's may be overloaded with up to 20% more (rounded down) rounds than their stated maximum capacity. Overloaded AFV's must be indicated as such on their roster entries. IMPORTANT: Any (Px) results scored against overloaded AFV's are automatically increased by '1'. (i.e., (P3) would become (P4).) This condition remains in effect until the number of rounds on board an AFV falls below the normal (non-overloaded) maximum number. Axis AFV's may never be overloaded.

e. Ammo Exhaustion—Whenever the number of rounds of ammunition aboard an AFV is reduced to 20% or less of its normal base load, any (Px) results against it are automatically reduced by '1' (i.e., (P3) would become (P2).)

f. Ammo Replenishment (OPTIONAL)—For the ultimate in detail, players may wish to include the replenishment option. Treat these rules as a general guide rather than hard rules since replenishment under battlefield conditions is extremely difficult to typify:

1) Before play begins, designate a number of transport vehicles as ammunition carriers (light trucks, medium trucks, Carriers, etc.). These vehicles may not transport or tow any other units; they may only replenish the ammunition supplies of AFV's. (For game purposes, use a ratio of one ammo carrier for every ten AFV's).

2) Replenishment procedures are similar to transport loading. The ammo carrier and the AFV's intending to replenish must begin the movement segment in the same hex. Neither vehicle may move or fire during replenishment turns. Each ammo carrier may replenish a maximum of two AFV's per turn. The rate of replenishment is dependent upon the size of the shell being loaded into the AFV as indicated by the following chart:

SIZE OF WEAPON	ROUNDS LOADED PER TURN
40mm or less	10 rds.
41mm to 50mm	7 rds.
above 50mm	4 rds.

NOTE: When replenishing Grant tanks, only one type of ammunition, either 37mm or 75mm, may be loaded during one turn.

3) If hit by fire on the Non-AFV Damage Table, all (Px) results are automatically increased by '3' for ammunition carriers.

3. Ramming—In extreme circumstances, tanks sometimes rammed enemy vehicles as a last resort. For game purposes, any AFV may ram any type of enemy vehicle during the movement segment. Ramming results in immediate immobilization (M-kill) to both vehicles.

4. Incidental AFV Damage—In addition to the conventional hazards presented in the standard rules, AFV's are also susceptible to the following low-probability damage situations:

a. Overrun Damage—Whenever an AFV destroys a heavy crewed-weapon unit in an overrun attack, there is a small chance of track breakage. For each weapon overrun, roll two dice. A dice roll of '11' or '12' means the AFV has broken a track and is M-killed.

b. Gunfire Damage—Gunfire directed at an AFV in large amounts has a small chance of destroying the optics on an armored vehicle:

1) Whenever 100 or more GUNFIRE factors are applied to the FRONT aspect of an AFV, one die is rolled. A die roll of '1' means the optics have been destroyed and the AFV is F-killed.

2) The Italian M13/40 tank had a design weakness which could conceivably allow gunfire to produce crew casualties. When firing at the M13/40 with 100 or more gunfire factors on its FRONT aspect, roll one die for the optics (as above) and then roll an additional die for crew casualties. A roll of '1' on this die roll produces a 'C1' result and requires the tank crew to determine its status on the Bail Out Chart.

5. Command Control—To simulate some of the C^3 (Command, Control, and Communications) problems associated with handling small armored units in action, designate one AFV as being the commander's vehicle. For each company-level, (or smaller) group of AFV's, one AFV is the command tank which must 'lay back' and may not participate directly in an engagement. *(For general reference purposes, company-level units contain the following number of AFV's: British—16 AFV's; German—17 AFV's; Italian—17 AFV's.)*

a. The command vehicle may not initiate fire against targets. If fired upon, it may only respond by dueling with the initiating unit. It may not overrun.

b. If a forward observer is assigned to armored units, it must be located in the commander's vehicle.

c. If the commander's AFV is K-killed or M-killed, '1' is subtracted from the die roll for all Bail-Out checks for the remaining AFV's in that group for the rest of the game.

E. ARTILLERY RULES

1. 'Will Not Fire'—It occasionally happened that a forward observer would call for fire—and nothing would happen. The battery was engaged elsewhere when the fire request was received:

a. Whenever an off-board battery is targeted for the initial turn of acquisition fire on a target (at the start of the four turn acquisition process), one die is rolled to ascertain its availability. A die roll of '1' means the battery is unavailable and cannot begin acquisition fire.

b. In each subsequent turn that the battery is called and is unavailable, the die roll for 'no fire' is increased by '1'. The 'no fire' die roll may never be greater than '5', however.

c. Once the battery has been made available, it may be freely used until it must once again use acquisition procedure. If this occurs, it must roll for 'no fire'.

d. SPECIAL: Do NOT roll for 'Will Not Fire' for BARRAGE fire-for-effects.

2. Artillery Reconnaissance—At mutual player agreement, some of each side's pre-determined target hexes may be revealed to the opposing player to represent prior reconnaissance efforts.

3. First Turn Fire-For-Effect—The fragmentation and direct hit probabilities assume a 'sustained' rate-of-fire, which was a rate calculated to minimize barrel overheating. During the first minute or less of firing at a new target, the rate of fire was quite a bit higher:

a. During the first TWO turns of fire-for-effect (after the three turn acquisition procedure), the fragmentation factors normally produced by a battery are DOUBLED. Also, direct hits are rolled TWICE for each battery.

b. On subsequent turns, fragmentation and direct hits are evaluated normally.

c. This is applicable only to the two turns after acquisition. It does not apply when shifting from one target to another with no re-acquisition. It does not apply to fire called into registration, concentration, or barrage hexes.

4. Sustained Effects of Barrage Fire—A barrage mission is a special type of emergency fire mission usually called for by infantry units when about to be overrun or in other dire straights. When the barrage call was received at the Fire Direction Center, every available gun was instructed to fire into the target area at their maximum rate of fire until the 'End of Mission' signal was given. This resulted in a sustained, continuous rain of shells into a small area which impeded, or interdicted, enemy movement through that area:
a. Whenever a barrage mission is fired, the effects of that fire are sustained for one complete turn; that is,

from one indirect fire phase until the beginning of the next indirect fire phase.

b. In the movement segment following the turn in which the barrage was fired, the effects of the barrage fire are still applied to any units entering the barrage hex as follows:

1) Units that occupied the barrage hex at the beginning of that movement segment are unaffected.

2) The first unit that ENTERS the barrage hex undergoes the full effects of the barrage fire. Subsequent units entering the barrage hex in that movement segment suffer the effects of collateral damage.

c. If the barrage fire is continued in the same hex during the next indirect fire phase, units in that hex would again undergo the effects of the full barrage fire.

5. Artillery Fragmentation Damage—All types of artillery have equipment such as recuperator tubes and gun sights which are highly vulnerable to concentrated amounts of gunfire or fragmentation. On larger weapons, the percentage of vulnerable target area becomes critical. To reflect this, include an additional vulnerability for the German 88mm FLAK and the British 25-pder:

a. Whenever the 88mm FLAK or the 25-pder weapons are targets for 100 or more fragmentation or gunfire factors in ONE FIRING, they are considered F-killed.

b. Weapon units in weapon pits are NOT vulnerable to this type of damage.

c. 'Collateral damage' effects are not applicable in this situation.

F. WEAPON CREW RULES

Variable Minimum Crews—The two-man minimum weapon crew is a simplification. The following treats weapon types individually with respect to the minimum number of men required to operate them:

1. Minimum crews for all medium and heavy weapon units are:

TYPE	FULL CREW	MINIMUM CREW
British:		
2-pder	5	2
6-pder	5	2
75mm (f)	6	2
25-pder	8	3
40mm Bofors	6	3
3-inch mort.	6	2
Vickers MG	6	1
German:		
28/20 PAK	3	1
50mm PAK	6	2
88mm FLAK	11	3
75mm LIG	5	2
81mm mort.	6	2
MG34	4	1
Italian:		
47mm ATG	6	2
20mm Breda	4	1
81mm mort.	6	2
Breda 37 MG	6	1

2. If a weapon's crew falls below it's stated minimum, it may not fire.

3. Any weapon unit operated by a minimum crew may only fire at HALF of its normal effectiveness:

a. Heavy crewed-weapons: Normal rate-of-fire HALVED (rounded down) for both initial and acquired fire.

b. Mortars: Normal fragmentation factors HALVED; no direct hits rolled for.

c. Machine Guns: At any given range, HALF normal gunfire factors.

d. Smoke shell fire remains normal regardless of crew situation.

G. INFANTRY RULES

1. Close assault—At close range, infantry weapons have a chance of destroying vehicles in a procedure similar to melee:

a. Only infantry and HQ groups may close assault enemy vehicles. Each unit may only close assault one vehicle per turn. A vehicle may only undergo one close assault per turn.

b. Close assaults are announced in the movement segment and resolved in the melee segment of the same turn.

c. Close assaults may not be conducted if there are enemy personnel units in the close assault hex. If enemy units move into a hex in which infantry units are attempting a close assault, the close assault may not occur. The infantry units must melee with the enemy personnel units.

d. Close assaults may only be conducted against STATIONARY vehicles. Unlike melees, announcing a close assault does not freeze the vehicles involved. They are free to simply move out of the hex unless loading or unloading heavy-crewed weapon units.

e. Infantry units intending to close assault may move only one hex.

f. Vehicles being close assaulted are given a final fire as in melee and overrun situations. Final fires are assumed to be at a range of one hex against infantry in the ASSAULT cover state (regardless of the field emplacements that may be in the hex). Final fire may consist of turret main gun (firing HE) or machine gun and hull machine guns. Hull machine guns must observe field-of-fire restrictions depending upon the direction the infantry units entered the hex. NOTE: Final fire may NOT be initiated against infantry units that did not move to initiate the close assault.

g. Infantry units being overrun may NOT engage in close assaults.

h. Infantry units close assaulting must undergo a morale check in the same manner as meleeing units. If the close assault is unsuccessful, all close assaulting units whose morale has broken are eliminated. If it is successful, they may resume normal function in the following turn.

i. Procedure—Close assault resolution requires only a simple tally of the number of assaulting men and a dice roll:

1) Tally the number of men involved in the close assault. If the assaulted vehicle is an AFV (EXCEPT Marder), divide the total in half. If it is a Marder or any other type of vehicle, do not divide in half.

2) Roll two dice. If the dice roll is LESS than the number of men assaulting (as determined in 1, above) the vehicle is K-killed. If the dice roll is equal to or greater than the number of assaulting men, the vehicle is unaffected.

2. Gunfire Obscuration—Gunfire, like other types of on-board fire, may be reduced in effectiveness by wrecks or dust. Any time the line-of-fire of personnel gunfire or machine gun fire passes through a hex containing a wreck counter or a dust counter, it is reduced by HALF for each hex passed through. If the fire would pass through TWO such hexes, it is completely blocked as if by a smoke hex.

H. STUKA RULES

1. Accidental Bombing—Target identification was sometimes a tricky proposition for Stuka pilots when engaged in dive-bombing attacks. Occasionally they bombed the wrong target. Even worse, occasionally they bombed the wrong side:

a. Prior to the resolution of dive-bombing attacks (during the indirect fire phase), the German player must roll one die for each aircraft engaged in a dive-bombing attack. If a '1' is rolled, the pilot of the aircraft has mistaken the target and either of the following occurs:

1) If there are no other units within a three hex radius of the target, the die roll is ignored and the Stuka bombs its target normally.

2) If there are other units within a three hex radius of the target, the British player may, at his option, select any one of them as the Stuka's new target—including Axis units.

b. For game purposes, ignore the possibility that the new target could be out of range. Assume the Stuka always has enough movement points to reach the new target.

2. Stuka Counter-Battery—Stukas may be used in a counter-battery role against off-board batteries.

a. Stuka aircraft assigned to counter-battery work may never appear on the mapboard. They are simply announced as engaging in counter-battery during the movement segment of the desired turn and then put aside.

b. Only those batteries that have been previously located may be counter-batteried by Stukas.

c. A minimum of three Stukas are required to neutralize an enemy battery. Each three-Stuka group may neutralize one battery for TEN turns, after which the battery may resume normal function.

d. Counter-battery neutralization is effective in the same turn that it is announced.

I. CAPTURE RULES

The Capture Rules are an entire sub-system encompassing a variety of rules affecting broken morale, captured equipment, and surrendered personnel units:

1. Personnel Surrender—Units whose morale breaks are not removed from the mapboard as in the standard game. Instead, they remain on the mapboard:

a. Units whose morale breaks when they are within an enemy unit's two-hex morale support range are SURRENDERED. In the turn after a unit surrenders, it may be maneuvered by the opposing player as desired at the rate of one hex per turn. Surrendered units may not fire or be fired upon (except through collateral damage). Surrendered units immediately drop all carried (light and medium) weapons. Units remain surrendered until rallied.

b. Units whose morale breaks outside of any enemy unit's morale support range do one of two things:

1) Broken units in good or full cover states drop into full cover and remain there until rallied or surrendered. They may not move, fire or participate in close assault or melee.

2) Broken units in the open must move towards a 'friendly' mapboard edge (as agreed upon by the opposing players considering the current unit dispositions) at the rate of one hex per turn until they are rallied, surrendered, or move off the mapboard. They may not fire, melee, or close assault, or capture enemy equipment.

c. Surrendered units may be moved by the opposing player until they move off the edge of the mapboard at which time they are permanently captured. No enemy 'escort' is required to keep them surrendered.

d. SPECIAL: Units in the following situations are not eliminated from play but are surrendered instead: units whose morale breaks during an overrun attack; units whose morale breaks during an unsuccessful close assault; units meleeing at odds worse than 1-2 or 4-1.

e. Rallying—Broken or surrendered units may be restored to normal function by rallying:

1) Units that are broken or surrendered may only be rallied if they are not in an enemy unit's morale support range.

2) BROKEN units may be rallied by being in the same hex with a friendly HQ group for one complete turn. Their morale is restored at the end of the complete turn. (A HQ group moving with broken units fulfills this condition.)

3) SURRENDERED units may be rallied by being in the same hex with any friendly (unbroken) personnel

or non-K or M-killed vehicular unit for one full turn. (Moving with the surrendered units for a full turn fulfills this condition.) They are restored to normal function at the end of the complete turn.

f. For definition purposes, units that are broken or surrendered have no morale support range and thus do not affect other units that are broken or surrendered.

2. Intimidation—The presence of overwhelmingly superior forces often was enough to force units to surrender without having suffered any casualties. If enough enemy units are within a unit's morale support range to reduce its altered morale value to zero, it immediately surrenders without having suffered any casualties. It may be maneuvered by the opposing player in the next moving segment.

3. Chain Surrender—Panic is contagious:

a. Any surrendering units inflicts an immediate four-point morale value loss on every other friendly personnel unit IN THE SAME HEX that has not already undergone a morale check in that turn. Each of these units may have their morale checked without having suffered any casualties.

b. Each subsequently surrendered unit inflicts an ADDITIONAL four-point morale value loss on any units that have not already undergone a morale check in that turn.

c. Morale value losses are CUMULATIVELY applied to those remaining, unchecked, units.

4. Captured Weapon and Vehicle Units—Any non-F-killed weapon unit or non-K-killed vehicular unit may be captured and used as if it were a friendly piece of equipment or retained as 'war booty'.

a. Weapon units are captured if they are in a hex at the end of a turn with undamaged/unbroken enemy vehicular or personnel unit. Weapons in bunkers or blockhouses are not captured if they are with friendly, unbroken personnel units.

b. Non-AFV vehicular units are captured if they are in a hex at the end of a turn with undamaged enemy AFV's, Carriers, 251/1's, 250/1's, or unbroken personnel units.

c. Only abandoned (crew bailed out) AFV's may be captured. Procedure is the same as for weapon units.

d. Captured weapons and vehicles may be towed as indicated on the Experimental Towing Rules chart.

e. Where applicable, and in those scenarios utilizing a victory point system, award a capture bonus of TWICE the K-kill value for all enemy units captured, either on or off the mapboard, at the end of the game. (Alternately, players may choose to incorporate the Firefight Victory Point system in those scenarios utilizing victory point systems. The Firefight VP System places the value of captured equipment in better perspective).

5. Using Captured Equipment—Players may turn captured equipment against their former owners:

a. Captured AFV's may never move under their own power or fire against their former owners.

b. Other captured vehicles may be utilized for transport and towing purposes in a normal fashion. Armament in captured vehicles may be used against their former owners.

c. Captured weapon units may be used normally with these qualifications:

1) Rates-of-fire, hit probabilities, ranges, minimum crews remain unchanged. Use the opposing player's HPT for the proper data.

2) Evaluation of TARGET DAMAGE on the Damage Tables requires some equivocation since a side's weapons are not listed on its AFV Damage Charts. Use the following equivalency table when determining damage inflicted on enemy AFV's by fire from captured enemy weapons:

(a) When using AXIS weapons against AXIS AFV's:		
7.92mm ATR	use	Boys ATR entry
20mm Breda	use	Boys ATR entry
28/20 PAK	use	37mm M6 entry
47mm (I) ATG	use	2-pder entry
50mm PAK	use	75mm (f) entry
88mm FLAK	use	6-pder entry

(b) When using BRITISH weapons against BRITISH AFV's:		
Boys ATR	use	7.92mm ATR entry
2-pder ATG	use	47mm (I) ATG entry
40mm Bofors	use	28/20 PAK entry
6-pder ATG	use	76.2mm (r) entry
75mm (f)	use	50mm long entry
25-pder	use	50mm short entry

3) For other weapons, use normal data for the particular weapon regardless of current ownership.

SCENARIO ADDENDA

To update and complete the first several scenarios, the following section outlines suggested additions to their 'Available Forces' sections since units presented in later rules are not found in the earlier scenarios. Also, a list of experimental rules is presented which outlines the most pertinent experimental rules for each scenario:

Scenario One:

Available Forces Additions: none.

Suggested Experimental Rules: Target Movement; Ammunition Limit; Dust.

Scenario Two:

Available Forces Additions:

British: Carrier (x5); Vickers MG (x1); 2-inch mortar (x2); Boys ATR (x3); Weapon pit (x2); Off-Board Artillery: TWO 25-pder batteries (with 2 barrages, 4 registrations, and 2 concentrations).

German: Med Truck (x2); Lt. Truck (x1); Staff Car (x1); MG34 (x1); 50mm mortar (x2); 7.92 ATR (x2).

Italian: Med. Truck (x2); Lt. Truck (x5); Staff Car (x1); 81mm mortar (x1); Off-Board Artillery: ONE 105mm gun battery and ONE 149mm howitzer battery.

Set-Up: British set up on section B, instead of section C. Use only board sections A, B, and C.

NOTE: Do NOT use Pre-Assault Artillery Softening optional rules. Suggested Experimental Rules: none.

Scenario Three:

Available Forces Additions:

British: Weapon pit (x3); Off-Board Artillery: TWO 25-pder batteries.

Axis: none.

Suggested Experimental Rules: Close Assault; Ammunition Limit; Incidental AFV Damage.

Scenario Four:

Available Forces Additions:

British: Crusader CS (x2); FO (x2). NOTE: FO's must be placed in AFV's as per rules. Crusader CS enter with first British group.

German: Pzkw IVe (x2).

Suggested Experimental Rules: All Movement Rules; Ammo Limit.

Scenario Five:

Suggested Experimental Rules: All Movement Rules; Off-Board Artillery; Infantry; Capture.

Scenario Six:

Suggested Experimental Rules: Infantry; Movement; Off-Board Artillery.

Scenario Seven:

Suggested Experimental Rules: Movement; AFV.

Scenario Eight:

Suggested Experimental Rules: Infantry; Off-Board Artillery; Stuka.

Scenario Nine:

Suggested Experimental Rules: Infantry; Off-Board Artillery; Stuka; Capture.

FREE-FORM SCENARIOS

Obviously many fictitious engagements may be constructed by players. When this is done, it is suggested that the Firefight Victory Point Table be used to evaluate their outcomes. Some general guidelines about each of the belligerents at Gazala are listed below and should be followed if possible inasmuch as they were true for most of this phase of the desert war.

British:

—Armor was rarely committed in less than one troop (3 tanks) strength.

—Tanks were often used without support.

—Armored units were expected to charge enemy positions wherever possible.

—Armored units were often composed of different kinds of tanks.

—Specialized battlegroups were almost never created.

—Infantry was usually without transport when in position. Carriers, however, were almost always available.

—Artillery support was available in units as small as one battery (called "troop" by British) when available at all. The 25-pounder, 4.5", and 155mm weapons were usually used together.

German:

—Armor was rarely committed in less than one platoon (5 tanks) strength.

—Tanks were almost never used alone, mechanized infantry being the preferred companion.

—Tank units avoided hard points of resistance and relied upon artillery to neutralize them.

—Tank units were usually equipped with the same vehicle type.

—Special combined arms units were often constructed around key weapons such as 88mm FLAK and Pzkw IIIj Specials.

—Infantry was rarely without immediate transport available; trucks or APC's.

—Artillery support was more often available than in the case of the British and usually in at least three batteries in strength. The 105mm howitzers and 150mm howitzers were usually available to any attack or defense with 105mm guns, 150mm guns and captured 25 pounder batteries reserved for special fire requests.

Italian:

—Armor was rarely committed in less than one platoon (5 tanks) strength.

—Tank units were often committed unsupported.

—Tank units rarely charged enemy positions of any kind.

Tank units usually were equipped with the same vehicle type.

—Infantry was almost always without transport.

—Artillery support of any kind was available only to the most organized attacks or defenses. When available, units as small as one battery could provide support. When available at all, both 105 howitzers and 149mm guns were used together.

THE FIREFIGHTS

INTRODUCTION

Throughout the desert war, contacts often occurred between British and Axis sub-units which were detached from their higher echelons for one reason or another. The result was usually an intense small battle known as a firefight. The following section depicts ten such engagements illustrating either important weapon characteristics not seen in the regular scenarios or commonly-occurring desert events.

Each Firefight is ten turns in length and victory is based exclusively on accumulation of victory points. The Victory Point Table lists all possible points to be scored by either side which, as can be seen, differ considerably from the values scored during scenario play. The reason for this is that the tables reflect generalized values of the various units throughout the entire campaign and are intended to show diverse measures of relative value which were not specifically battle-dependent. For example, throughout the campaign the capture of an enemy AFV would have been of considerable importance to either side but during scenario five for example, little really mattered except the fall of the British line and so victory conditions are based on taking the position and not kill or capture tallies.

FIREFIGHT RULES:

1. Set Up:

a. All units entering the game must enter on the first turn.

b. In those Firefights indicated as occurring on only one mapboard section, units moving outside of the board section are considered to have exited the mapboard.

2. Game Length: All Firefights are ten turns long.

3. Rules: Any experimental or optional rules may be used. The Firefights have been designed to be used with the more intricate experimental rules.

4. Victory Conditions: All victory conditions are based upon the Firefight Victory Point Table. The side accumulating the most points at the end of the game wins. Ties are considered drawn games.

a. Only the single largest point score may be credited for any one enemy unit. *EXAMPLE: Points for capturing an M-killed Pzkw-IIIh would be 20, not 23 (i.e., 20 + 3 points for the M-kill).*

b. Points may be scored for both M- and F-kills on the same vehicle.

FIREFIGHT A—'THE QUEEN OF THE DESERT'

In the early days of the war, Italian armored units were often compelled to fight the heavy British Matilda II tanks. The usual result of these engagements earned the Matilda II the nickname "Queen of the Desert":

British —Matilda II x3

Italian—M13/40 x15

Set Up—One side enters from the north edge, the other enters from the south edge onto one mapboard section. Italians move first.

FIREFIGHT B—'AN EVEN ENCOUNTER'

A much better armored match occurred when Italian M13/40's encountered lighter British armor:

British—Stuart x6

Italian—M13/40 x15

Set Up—(As in Firefight A)

FIREFIGHT C—'DUEL OF THE BEST'

A duel between Pzkw IIIj Special and Grant tanks, the best vehicles on both sides, must have been fascinating. This Firefight sets up such a duel:

British—Grant x8

Germans—Pzkw IIIj Special x5

Set Up—(As in Firefight A). Germans move first.

Special—British must have a 75mm ammunition limit and Germans an APCR ammunition limit as outlined in the experimental rules.

FIREFIGHT D—'CONVOY RAID'

Supply and transport columns would be attacked in the open desert by each side using their fastest and generally lightest armor. The supply columns were generally escorted by fighting forces in the form of armor or at least anti-tank guns:

British—Stuart x6

Germans—Medium Trucks x10
250/1 x2
50mm PAK x2
Sd. Kfz. 7 x1
88mm FLAK x1
Pzkw IVe x1

Set Up—Germans enter anywhere on east edge of the mapboard; move first.

British enter anywhere on north and/or south edges.

Special—Germans score two points extra for every truck successfully exited off west edge of board by end of game.

FIREFIGHT E—'APPROACH IN THE OPEN'

One of the worst possible tasks to ask infantry to perform was to assault enemy positions over open ground in daylight. Nevertheless, it often occurred; especially when enemy strength was unknown:

British—All 'First Platoon' units
2" mortar x1
3" mortar x1
Light Truck x5

Italian—Breda 37 MG x1
20mm Breda x1
Light Truck x1
PLUS: '11/LMG' and '11/R' groups
Hedgehog x4
Weapon pit x2

Set Up—Italians set up anywhere on one section of board. British enter same section from the south. British move first.

FIREFIGHT F—'NIGHT ASSAULT'

A much better way of conducting frontal assaults was to conduct them at night, but in the desert this was very dangerous due to the lack of landmarks which could be seen by moonlight. To compensate for this, illumination was often provided in the form of artillery or mortar star shells by both sides.

British—(As in Firefight E)

Italian—(As in Firefight E)

Set Up—(As in Firefight E)

Special Night Rule—No unit may ever run. Maximum normal firing range for all weapons is 2 hexes at one-half normal firepower. The British player must dismount units at least four hexes from Italian positions. The 3" mortar may not fire HE but may fire star shells at any hex during any desired turn. When illuminated, units in the target hex and within a two hex radius of it may be fired upon at full rate. They may also fire at any enemy units within the two hex radius at full rate.

FIREFIGHT G—'NIGHT RECOVERY'

When immobilized during a battle and not recovered immediately, vehicles were either recovered by friendly units, demolished by the enemy, or captured by him during darkness. Fierce, short firefights often developed between opposing units doing the recovery or demolition work at night:

British—(M-killed) Carriers x3
ACV x2
Light Truck x1 (use as ACV)
PLUS: All 'First Platoon' units

Germans—(M-killed) 250/1 APC x3
Sd Kfz. 7 x 2
Medium Truck x1 (Use as a Sd. Kfz. 7)
PLUS: All 'First Platoon' units

VICTORY POINT TABLE:

Unit Type	K-kill (vehicles) or destruction (personnel)	M- or F-kill	Capture/ Surrender (Not F-killed)
British			
Stuart	12	4	12
Crusader (and CS)	14	4	16
Grant	24	5	30
Valentine	20	4	22
Matilda	20	4	22
Carrier	4	2	8
Quad	3	2	6
ACV	4	2	8
Light Truck	2	1	4
2" Mortar	—	3	5
3" Mortar	—	6	10
Vickers MG	—	6	8
Boys ATR	—	2	4
2 pdr. ATG	—	5	10
Bofors AA	—	7	14
6 pdr. ATG	—	7	16
75mm (F) ATG	—	5	12
25 pdr. Artillery	—	8	16
FO	3	—	3
HQ group	2	—	2
Infantry section	5	—	3
CREW	3	—	2
German			
Pzkw IIIh	20	3	20
Pzkw IIIj	28	3	35
Pzkw IVe	14	3	14
Marder	16	3	16
251/1	6	2	6
250/1	4	2	4
Sd. Kfz. 7	3	2	3
Stuka	10	—	—
Staff Car	2	1	2
Light Truck	2	1	2
Medium Truck	3	2	3
50mm Mortar	—	3	4
81mm Mortar	—	7	9
MG34 MG	—	4	5
7.92mm ATR	—	2	4
28/20 PAK	—	5	15
50mm PAK	—	7	15
75mm LIG	—	7	12
88mm FLAK	—	10	24
FO	4	—	4
HQ group	2	—	2
Infantry section	6	—	4
CREW	4	—	3
Italian			
M13/40	12	4	12
Semovente	10	4	10
45mm Mortar	—	2	3
81mm Mortar	—	9	11
Breda 37 MG	—	4	6
20mm Breda	—	5	10
47mm ATG	—	6	12
FO	2	—	2
HQ group	2	—	2
Rifle group	3	—	2
LMG group	4	—	2
CREW	3	—	2

(NOTE: ACV's may tow Carriers or 250/1 APC's and Sd. Kfz. 7's may tow 250/1 or Carriers according to the rules at a maximum rate of one hex per turn.)

Set Up—The three damaged Carriers are placed by the German player anywhere in one board section and the three 250/1's by the British player in the same section. Recovery units enter the section anywhere along one edge—each player rolling one die to determine which. A roll of 1 indicates north, 2 south, 3 east, 4 west, 5 or 6 are rolled again. Germans move first.

Special—Enemy vehicles demolished or completely hooked up for towing or being towed at the end of the game may be claimed as K-kills or captures respectively. Friendly vehicles not hooked up, with no undamaged friendly or undamaged enemy units in the same hex, may be claimed by the enemy at the end of the Firefight as M-kills. Any infantry unit may demolish an enemy vehicle simply by being alone in a hex with it for one turn without moving or firing. As in Firefight F, night conditions are assumed to be in effect. Any damage inflicted on enemy units during the game through combat accumulates points also.

FIREFIGHT H—'BLIND APPROACH'

In the desert, minefields were almost always marked by being encircled by one strand of barbed wire. At night, however, these markings could and often were missed with very bad results. This Firefight simulates a platoon assault upon a reinforced section strong point at night, which causes the mines to be hidden from view:

British—All 'First Platoon' units
Light Truck x5

Germans—'1/1' infantry section
MG34 MG x1
hedgehog x4
minefields x8
Weapon pit x1

Set Up—Germans set up anywhere in one section with British entering anywhere along the south edge of the same section. British move first.

Special—All night rules as in Firefight F are in effect. Germans may place minefield counters on board or may secretly record the location of as many as three minefield hexes. British must dismount at least four hexes from the nearest German unit as in Firefight F.

FIREFIGHT I—'MUTUAL BOMBARDMENT'

In the desert, opposing troops would sometimes be stalemated. Sudden, massive, buildups of artillery fire would then occur:

British—All 'First Platoon' units
hedgehog x10
bunkers x4
weapon pits x2
minefield x6
2" mortar x3
3" mortars x2

Offboard: TWO 25 pdr. batteries;
TWO 4.5" batteries

Germans—All 'First Platoon' units
hedghog x10
bunkers x2
weapon pits x3
minefield x6
50mm mortar x2
81mm mortars x3

Offboard: THREE 105mm howitzer batteries

Set Up—Both sides set up all units on one section, no more than 10 hexes apart. Germans set up first. British move first.

Special—Remember—all possible rules apply including smoke shells at mutual player consent. The purpose of this Firefight is to determine which side can best use indirect fire, although an assault by one side or the other is possible. No points are directly scored for counter-battery fires.

FIREFIGHT J—'BATTERY OVERRUN'

An artillery battery in the rear areas caught while deployed by an enemy armored breakthrough was in deep trouble. It could choose to hook up and retreat under fire, which was almost never successful, or it could stand in place and try to beat off the attack with armor-piercing ammunition:

British—25 pdrs. x2
75mm(f) x2 (treat as 25 pdrs.)
Quads x2
Medium Trucks x2 (treat as Quads)
All 'First Platoon' units except section '1/3'

Germans—Pzkw IIIh x10

Set Up—British set up anywhere in section B. Germans enter anywhere on south edge of section B; move first.

Special—British artillery must not be hooked up or in process of hookup at start. Vehicles must be at least one hex away from weapon units. British score 3 points for every undamaged Pzkw IIIh which has not exited the board section along its north edge by the end of the game.

CAPSULE SCENARIO SUMMARIES

Scenario One "Clash of Armor"

This Scenario is based upon the first full-scale encounter between British and German armor in the Battle of Gazala. It began at approximately 7:15 A.M. on the morning of the 27th of May, 1942, when the British 4th Armored Brigade was assaulted by the entire armored weight of the Afrika Korps approaching from the southwest. For the first time in the war German forces were fully exposed to the high quality of American Lend-Lease equipment in the form of the M3 Medium "General Grant" tank. The results to the Germans were, to quote Carrell in *The Foxes of the Desert*, ". . . some devil's work." The Scenario itself reflects one small portion of the overall engagement—that of the nine Grant's of "B" Squadron of the Fourth Armored Brigade's Third Royal Tank Regiment facing the spearhead vehicles of the 8th Panzer Regiment of the 5th Panzer Division. To maintain play-balance, only 21 of these vehicles are involved in scenario one. In the actual encounter, however, "B" Squadron alone faced over one hundred German tanks and after 15 minutes barely managed to escape with only one of their original nine Grants.

Scenario Two "The Group Crüwell Feint"

This Scenario represents one small portion of the infantry engagement which began the Battle of Gazala at 2:00 P.M. on the afternoon of the 26th of May, 1942. As explained further in the Designer's Notes the Italian-German infantry attack was intended to deceive the British into believing that the entire thrust of Rommel's offensive was going to occur in the north of the Gazala line. However, as Robert J. Icks reveals in his book *Famous Tank Battles*, the ". . . Italians pressed the attack so half-heartedly that the British decided it was only a feint . . .". The units from the Second South African Brigade on the defense and arbitrary Italian infantry units of the "Sabratha" Infantry Division "corset-laced with German troops from the 15th Rifle Brigade on the attack. The Scenario is intended to show the fearsome casualties and savage close combat which can occur during a purely infantry-infantry engagement. The immense firepower of the German infantry section should also become evident.

Scenario Three "Action at Point 171"

Scenario Three is drawn from the overrun destruction of the Third Indian Motor Brigade occurring between 7:30 A.M. and 8:00 A.M. on the morning of the 27th of May, 1942, near the southern-most tip of the Gazala line. The brigade had been moved over the previous two days slowly and in pieces to its position, a barely recognizable terrain feature known on the maps as "Point 171". When dawn broke on the 27th, it was seriously short of equipment, not well dug in and had almost no mines laid. Dawn light revealed what the Brigade commander, Brigadier Filose, called "a whole bloody German armored division" but in reality was the 10,000 or so vehicles of the entire Afrika Korps just rounding Bir Hacheim and beginning to push north. The Brigade's artillery opened fire at about 6:30 A.M. and did some damage over the next hour, but at 7:30 A.M. a wave of about 60 Italian tanks simply drove right through it followed shortly by nearly two hundred German tanks on the same path. The Brigade was totally destroyed as a fighting force even though many of its personnel escaped, but as the *Official History of the Indian Armed Forces in the Second World War* reveals, it ". . . made a big dent in the Axis armor."

Scenario Three depicts arbitrary sub-units of the Brigade's 18th King Edward's Own Cavalry regiment being so overwhelmed by vehicles from the Italian "Ariete" and German 15th Panzer divisions and is intended to show the weaknesses of Italian armor and of unsupported personnel when attacked by armor, and the relative ineffectiveness of anti-tank rifles.

Scenario Four "The Panzer Thrust is Slowed"

After slamming into the Fourth Armoured Brigade (Scenario One) and overrunning the Third Indian Motor Brigade (Scenario Three), the two panzer divisions of the Afrika Korps continued to run due north literally looking for a fight with the remaining British armor. They found it near a place called Bir el Harmat at about 2:00 P.M. on the afternoon of the 27th of May, 1942, when they ran into the 22nd Armoured Brigade. A terrific tank battle ensued and the 22nd was quickly forced to retreat. As the Afrika Korps panzers followed-up, they were struck on both flanks by British tanks from two additional Armoured Brigades, the First Army Tank from the west and the Second from the east.

Scenario Four depicts one small portion of the vicious, mixed battle which continued for the rest of the afternoon. Sub-units of the 21st Panzer Division are being hit by Matilda tanks of the 44th Royal Tank Regiment from the west and Crusader II and Grant tanks of the Second Royal Tank Regiment from the east. Scenario Four should reveal several equipment weaknesses or peculiarities including:
—The fragile nature of the Crusader II
—The especially thick armor of the Matilda II
—The potency of the 76.2mm(r) weapon on the Marder III and the special qualities of APCR ammunition.

In addition, the effects of battlefield smoke, vulnerability of immobilized vehicles to artillery and the importance of tank-to-tank dueling should become apparent.

Scenario Five
"The Destruction of the 150th Brigade"

In the Designers Notes, a detailed account appears of how the Afrika Korps was forced to stop its great offensive and assemble behind the British Gazala Line positions in an area nicknamed the 'Cauldron' (see map). Rommel had done this in hopes of breaking through the minefield from the east and bringing in needed supplies and replacements with which to resume his advance.

But, an entire infantry brigade, Brigadier Haydon's 150th, with 6-pounder anti-tank guns, artillery and Matilda and Valentine heavy tanks lay squarely in the desired path to the west. In effect, this meant that the entire Afrika Korps was cut off from supplies and surrounded by strong British forces on all sides. Rommel had only one alternative short of surrender (which he seriously contemplated according to *Rommel* by Desmond Young) and that was to attack the isolated 150th Brigade in hopes of breaking through.

Scenario Five is taken from this savage and desperate battle in which the 150th Brigade conducted what Carver in his book *Tobruk* calls "one of the most gallant defensive actions of the war." Motorized infantry from the 3rd Battalion of the German 104th Panzer Grenadier Regiment supported by 21st Panzer Division tanks are conducting one of the final assaults on battered sub-units of the Fifth Battalion of the Green Howards with guns

from the 72 Field Regiment and Norfolk Yeomanry Anti-Tank Battery, both of the Royal Artillery.

Scenario Six "Aberdeen"

While the 150th Brigade was being destroyed by essentially the entire Afrika Korps, little action of any kind was taken by the strong British armored units pinning the Germans and Italians into the "Cauldron" area. An ambitious offensive, however, was being planned by the British high command who dubbed it "Aberdeen." The Designer's Notes describes "Aberdeen" in some detail but in essense it consisted of a massive frontal assault directly into the "Cauldron" area using a night infantry attack followed closely by armor both with heavy artillery support.

Secnario Six depicts one portion of the armored phase of this action and involves sub-units of the British 22nd armored Brigade attempting to assault the anti-tank gun and infantry screen (called a "PAK Front" by the Germans) of the Afrika Korps Army Headquarters with armored counterattack by elements of the 21st Panzer Division. The Scenario is representative of actions which occurred in this area at about noon on the 5th of June, 1942, and should show clearly the results of massed armored attack on dug-in anti-tank guns which are heavily supported by artillery*. The use and value of artillery and smoke ammunition, and the incredible lethality of the German 88mm FLAK gun, should also become apparent.

* In the actual battle, these results were that the "British armored attack had ended in disaster" as quotes Colonel Rogers in his book, *Tanks in Battle*. Scenario 6 should reflect this well.

Scenario Seven "Crisis at Knightsbridge"

Even though an almost unbroken series of mistakes and defeats had befallen the British since the Gazala Battles had begun on the 27th of May, on the morning of the 11th of June neither side could honestly be said to have possessed a decisive superiority. Both the Axis and the British forces had suffered severe casualties, the Germans most importantly in infantry and the British in armor, but both sides were relatively the same strength, especially where the most powerful armored forces lay facing each other—at Knightsbridge.

The British decided to attack the 15th Panzer Division on the next day, the 12th of June, and to allow for this the Second Armored Brigade joined the Fourth Armored Brigade. But a confusion in orders and the sudden disappearance from the field of a key British commander compelled the two armored brigades to stop and wait for orders in a position south of Bir Lefa (see map). The Germans immediately seized on this opportunity and struck the stopped British tanks with the 15th Panzer Division from the south and the 21st Panzer Division from the northwest.

Scenario Seven reflects one portion of this envelopment which, according to the *British Official History*, was ". . . to have disasterous consequences for the British." The game is intended to show the serious effect of armor being engaged from more than one direction at once and the complications and confusions which can arise in armored combat. The use by the Germans of ATG's and 88's moving right up with the armor, sometimes taking advantage of sudden duststorms for cover, should also be noted.

Scenario Eight
"Bir Hacheim—The Fall of Point 186"

(Chronologically, scenario eight preceded scenario seven in the actual Gazala Battles but is presented here for reasons explained in the Designer's Notes.)

Since the beginning of the Gazala campaign on the 27th of May, 1942, the Bir Hacheim "box" defensive position occupied by the 1st Free French Brigade, one batallion of Jewish volunteers, and a British AAA unit, had been literally a thorn in Rommel's side. Sending out well-armed columns to attack anything within reach (including British forces by accident a few times), the position had destroyed or captured many Axis vehicles and personnel. To try to reduce it, the Germans and Italians had repeatedly attacked and each time had been repulsed with heavy losses in what Carrell in *The Foxes of the Desert* states had ". . . developed the toughest battle to date in Africa." Von Mellethin in *Panzer Battles* put it more strongly by saying ". . . in the whole course of the desert war we never encountered a more heroic and well-sustained defense." Throughout the 8th and 9th of June special and very well equipped German and Italian mechanized and motorized infantry units with attached 88's, heavy artillery and a few tanks inched into the morass of defensive positions surrounded by mines. On the evening of the 9th, they managed to capture the only "high" ground at Bir Hacheim, Point 186, which allowed them clear and continuous artillery observation of the entire Free French position. This was enough to finally force the Free French commander, General Koenig, to request permission to withdraw and this was accomplished on the following evening.

Scenario Eight portrays one small portion of this engagement and involves Free French units from the Bataillon de Marche, 22nd North African Company, 2nd Anti-Tank Company, and the Fusiliers-Marins on the defense with German "Gruppe Baade" 15th Panzer Division Panzer Grenadiers and Italian Trieste Division motorized infantry on the attack.

Scenario Nine "Tobruk Falls"

After the fall of Bir Hacheim and the decisive defeat of the British armour on the 12th of June, Rommel's attention was drawn to the capture of Tobruk, which almost exactly one year before had frustrated his every attempt. During this time in preparation for the attack, little significant action of any kind had transpired between the two exhausted sides. The British had decided to evacuate the South African and British divisions still holding the actual line, and this was accomplished between the 14th and the 16th of June. Rommel's exhausted units did their best to prevent the escape of these troops, but in general the withdrawal was successful.

Tobruk itself, however, was decided by the British High Command to be held hopefully as a base for further offensives against the Germans when the armored units were re-equipped. By the 18th of June, Tobruk was surrounded by German and Italian forces and two days later, at dawn on the 20th of June, they attacked the perimeter with every tank, gun, and Stuka that could be assembled. Scenario Nine depicts one part of this action and pits sub-units of the 2/5 Mahratta Light Infantry Regiment behind "leaky" mine and anti-tank trench barriers against assaulting tanks and infantry of the 15th Panzer Division. Scenario Nine, like the actual battle upon which it was based, should when compared to the desperate clashes preceding, be almost anti-climactic.

DESIGNER'S NOTES

(The story of the war in the North African desert between 1940 and 1943 is incredibly long and complex and because of this, many books and articles are available to describe it. This summary will therefore ignore the maneuvers of the British and Axis forces which led them to their positions of May 26, 1942 and concentrate on the specific events of the next four weeks; the Battle of Gazala.)

Gazala? Who has ever really heard of the Battle of Gazala besides those who have run across it in general reading or in looking for accounts of the Battle of El Alamein? It can safely be said that, of all of the battles of World War II, few have been so poorly appreciated in importance as has been this one. The battle itself is not well recorded in the histories and its immense and far-reaching impact on the desert war in general and especially the Battle of El Alamein three months later (Alam Halfa ridge) is almost never properly written into the accounts. By some, the Battle of Gazala, and not the Battle of El Alamein, is regarded as the most important single large engagement of the desert war.

The reasons for this are many, but primarily consist of three. First, the Battle of Gazala without a doubt was the most brilliant victory of Erwin Rommel's career, although in achieving it he made some of his most remarkable blunders. It was upon this victory that Rommel was promoted to the rank of Field Marshal, one of the youngest men (49) ever to reach this grade in the history of the German army. Never before the battle or after was Rommel held in such regard by the German and Italian General Staffs, Hitler, and begrudgingly, the British most notably in the form of Winston Churchill.

Second, without the occurrence of this immense victory precisely at this time and in this manner, the German High Command almost certainly would have successfully launched and completed the planned *Operation Herkules*, the sea and airborne invasion of Malta. As it was, the collapse of the Eighth Army on the Gazala Line and the subsequent catastrophic fall of the strategic port of Tobruk and the capture of its huge garrison was enough to influence Hitler to allow Rommel to push into Egypt in hopes of a quick seizure of the Suez Canal. For this purpose, *Herkules* was postponed and the troops and supplies intended for use in the operation sent to Rommel's army instead. Malta remained unattacked except by air and served as both the staging area for the British El Alamein buildup and the key Royal Navy port from where submarine and surface units could control the Mediterranean and efficiently strangle the Afrika Korps by sinking its supply ships sailing from Italy. The decision by Hitler for the postponement and subsequent abandonment of *Herkules* would not have been made without the Gazala victories, and it was one of the most serious strategic mistakes of the war.

Finally, the collapse of the Gazala Line and Tobruk's fall shook the entire British Empire as nothing had since Dunkirk. Churchill himself was shocked as severely as when the Japanese had sunk the battleships Prince of Wales and Repulse at the beginning of the war. He received the news from the hand of President Roosevelt, while meeting with him in Washington, and his first action was to ask Roosevelt directly for the Lend Lease of 300 of the new Sherman tanks which were intended for equiping the American 1st Armored Division. Roosevelt's immediate answer was yes, and upon that answer the fate of the El Alamein battle was essentially sealed because in addition to the 300 Sherman tanks which far outclassed all but a few Axis vehicles, 100 self-propelled guns and massive stocks of assorted other materials were shipped to the British without delay. No other single factor was more responsible for the rapid rebuilding of the Eighth Army than this, and with the new Shermans absolutely dominating the battlefield, Rommel's attempts to break through the El Alamein Line three months later became in his own words, a "battle without hope." An Axis loss at Gazala, or even a less spectacular victory might well have not produced the same response and the history of the desert way may have unfolded in a considerably different way. For these reasons, then, the Battle of Gazala was of overwhelming importance in changing the course of the desert war.

The Gazala Battles officially began in mid-afternoon of the 26th of May, 1942, when large elements of Italian and German infantry with heavy artillery support assaulted the South African positions on the Gazala Line. (Scenario two in the game is based upon this action.) To understand this or any of the other portions of the battle, however, it is necessary to have a limited understanding of the reasons why the Gazala Line was built by the British in the first place and how the Germans came to attack it.

The Line was established in the period between the retreat of the Eighth Army under German pressure out of the area of Libya known as Cyrenaica (see map) and the beginning of operations in May. It was not designed to be a truly effective defensive line from the outset, but rather an impenetrable shield behind which divisions could be assembled for an offensive unimpeded by the Axis. This buildup necessitated the establishment of huge forward supply dumps immediately behind the line itself and throughout the battle the British were restrained in action partially because of worry that these stores would be captured by the Germans, an idea which as it turns out was indeed part of Rommel's plan.

The line ran from Gazala and the coastline on the north almost straight south to Bir Hacheim for a distance of over 40 miles. It was manned by two Commonwealth divisions, the 1st South African and the British 50th, whose six brigades were disposed in what came to be known as "boxes" or defensive positions which could be defended from any direction. One additional brigade, the First Free French, was located at the line anchor point at Bir Hacheim in a defensive box of such complexity that the position was almost impregnable. Behind the line were scattered various reserve forces mostly in boxes and two full armored divisions and two armored brigades together containing nearly seven hundred tanks, 167 of which were the newly-arrived American Lend-Lease Grant's which were far superior to any Axis vehicle at the start of the engagement. In the Tobruk fortress itself was another full division, the Second South African reinforced by one more brigade.

The boxes of the line were marvels of defensive ingenuity and such a departure from normal British defensive policy that field officers from all fronts travelled to Gazala to inspect them. They were surrounded by dense minefields and connected by a "mine marsh" of such complexity (over one-half million mines) that the area to this day has never fully been cleared and has killed or maimed thousands of Arabs since the end of the war. Unfortunately, however, portions of this huge screen were unprotected by fire of any kind and could, therefore, be breached by Axis sappers. In the battle as will be related later, this did indeed occur on a large scale.

Facing this formidable barrier were nine German and Italian divisions and one separate brigade. A total of 560 tanks (332 German and 228 Italian) could be thrown against the line supported by hundreds of self-propelled anti-tank guns and thousands of towed anti-tank weapons including 48 88's which, unlike the British, were thought of by the Axis army as offensive as well as defensive equipment and accompanied most armored attacks. This was a very potent strike force and Rommel, true to form did not hesitate to use it when he felt the time was right.

The time was right on May the 26th. The British, backed by almost complete knowledge of the Axis army dispositions, predicted and expected the attack.

Rommel had two choices for the assault. He could strike the line directly in hope of a breakthrough on a small front for deep penetration to take the airfields and supply bases at El Adem, or he could launch his forces on the long trip down the line and around Bir Hacheim for the purpose of engaging the British armor behind the line. Knowing that while significant British armored units still existed he had no freedom, the second option was chosen. To make the British believe that the first option was being conducted Rommel instructed the DAK (Deutsche Afrika Korps—the German armored portion of the Axis army consisting of the 15th and 21st Panzer divisions) commander, General Crüwell, to take one German mechanized infantry brigade and two Italian infantry divisions and all of the Axis heavy artillery which was too cumbersome for a fighting march of over 50 miles, and attack the north part of the line. To further confuse the British, trucks with airplane engines and propellors on top were to raise huge clouds of dust behind the frontal attack thus making them believe large mobile forces were assembling there. In the meantime, the actual main attack, consisting of DAK, the 90th Light (mechanized infantry) division and two mobile Italian divisions was to assemble at Rotunda Segnali to begin the long southward movement to "right hook" the British line. It was hoped that the British would be surprised and their armor destroyed completely on the 27th with Tobruk itself falling four days later.

By anybody's appreciation, the plan was, on the whole, brash to the point of being reckless and seriously weak in key areas. For example, no thought was given to the possibility that the British armor might indeed not be destroyed on the 27th in which case the strike force would be stuck behind the line living off a 100 mile supply link. No thought seemed to be given to the fact either that the Free French might resist the attack of the one Italian division (the Trieste) assigned to take Bir Hacheim and be in a position to cut this supply line. In the battle, both of these unforseen events did indeed come about.

The frontal feint attack by Group Crüwell began on schedule at about 2 P.M. on the 26th (Scenario 2) and seven hours later the big sweep was initiated. Over 10,000 vehicles began to drive south and their progress was reported to the British every mile of the way by the efficient "eyes" of the South African Armoured Cars. The feint had fooled no one and the sweep by night was no surprise. But the British Command for some reason did not act on this knowledge and the warning call to consolidate the armored divisions behind the line which had been broken up to achieve better area coverage was not given. This meant that three brigades, the Third Indian Motor at Point 171, the Seventh Armored at Retma and the Fourth Armored at Bir Beuid, were unwarned that a massive attack was headed in their direction.
It took them by surprise on the morning of the 27th. The Third Indian Motor was absolutely destroyed (Scenario 3), the Seventh Motor was forced to retreat quickly, and the Fourth Armored was slammed into by almost the entire Afrika Korps armor (Scenario 1). The results are as described in the Scenario writeups but in general, the three brigades were neutralized but at great cost to the Axis. Rommel at the beginning of the campaign had based his planning on very erroneous and limited knowledge of the British which, as has been mentioned, was not the case with them. He, for example, had not been aware of the strength of the Grant tank or of its numbers in the Eighth Army nor had he been aware that new and better 6-pounder anti-tank guns were arriving in large numbers (112 at the start of the battle). Had he been appraised by German Intelligence of these facts, he would have been prepared for a harder fight and planned accordingly. As it was, the strength and fighting ability of especially the British armored units surprised and shocked him and his army.

Battered but not slowed the mass of German armor now continued to drive north. By mistake the Trieste division had missed Bir Hacheim during the night and ran into the minefield north of it instead, so the Italian Ariete armored division was broken off to attack the French. Also, the 90th Light broke away to head directly for El Adem in an attempt for a quick coup, and thus only DAK remained to drive north. By afternoon they reached the Knightsbridge area where a heavy British armored counterattack (Scenario 4) essentially stopped the advance. The worst had happened to his attack and Rommel admitted it. His forces were broken up badly with the 90th Light division involved with huge British forces at El Adem, the 15th Panzer and 21st Panzer out of fuel and ammunition on the Rigel and Sidra ridges and the two Italian mobile divisions absolutely stuck by Bir Hacheim. He had lost so many tanks that, for example, only 43 remained in the entire 15th Panzer division. His supply line was nearly 100 miles long and constantly being bombed by the RAF and finally, the British armor had been nowhere near destroyed.

Rommel, however, was not aware of this last fact and so on the next day, the 28th, he ordered the 21st Panzer division to continue to push north which they did and reached the coast. Being so strung out like this and so weak, a concentrated British attack at this time would have undoubtedly stopped the battle and possibly even ended the desert war. No attack came. On the next day, the 29th, Rommel finally properly percieved the situation and, unimpeded by the British, gathered the 21st Panzer, 15th Panzer, 90th Light and Ariete divisions together in the area which soon was known as the Cauldron because of the boiling Axis activity inside of it. The Trieste division in the south had breached the "mine marsh" north of Bir Hacheim in an area unprotected by fire, and at least some supplies could reach Rommel via this route. For full supply of the strike group, however, a more direct and wider channel was needed and this obviously would best go through the minefield at Sidi Muftah.

But, in moving in this direction, it was discovered that one entire brigade, the 150th, lay astride the desired path in one of the strongest boxes in the line. Without a direct route the Axis group would have been slowly destroyed, because not enough supplies could have reached such a large force via the routes available. No option lay open to Rommel except that of attacking the 150th frontally. Between the end of May and the second day of June this desperate battle was conducted (Scenario 5) and for reasons still unknown to this day, no help was given to the 150th by the rest of the Eighth Army until after its last platoon had been destroyed. This help came in the form of a frontal attack on the Cauldron on the 5th of June, three days after the collapse of the 150th brigade and long after the Axis forces in the Cauldron had been almost fully resupplied and re-equipped.

The code name for the big, complicated frontal assault was *Aberdeen* (Scenario 6) and needless to say it was a disaster, running onto well dug in and extensive anti-tank and artillery defenses. Upon its failure Rommel took the opportunity to break out of the Cauldron in a counterattack which was very effective. Free of fear of another British attack and no longer hemmed into the Cauldron area, Rommel could free significant German forces finally to go south and dispose of the Free French once and for all. Again unhindered by the remainder of Eighth Army, this savage but one sided battle was conducted between the 8th and 9th of June (Scenario 8) and brought to a bloody close on the 10th with the evacuation of the French.

Rommel now (11 June) pushed out of the Cauldron area toward the prize of El Adem with all three German divisions plus Ariete at significant strength. The British resisted little although El Adem was not captured by the German forces on the 11th and that night the advance stopped with the German and Italian divisions separated. Thinking this to be an opportunity to attack the German divisions separately, the British planned an assault against the 15th Panzer to begin on the 12th and to use two fairly strong armored brigades, the Second and the Fourth in the attack.

The battle began as expected but when assembled in the jump-off area at Bir Lefa, the two brigades stopped and waited for orders from their divisional commander, General Messervy who was hiding in a dried-up water cistern (a "bir") after being almost captured by Germans. This wait was fatal, because Rommel seeing both units immobile with the 15th Panzer to their south and the 21st Panzer to their west, ordered both divisions to attack immediately.

The subsequent crushing of the two brigades (Scenario 7) was the most decisive defeat suffered by the British up until this time and accomplished what Rommel had intended to accomplish 16 days earlier, the elimination of most of the British armor from the field.

Little need be said about the rest of the campaign. The German and Italian divisions had once again been worn down severely by the Bir Hacheim and Knightsbridge fighting and were therefore unable to stop Eighth Army from successfully evacuating the line. The Tobruk perimeter was surrounded and, remembering the long and unsuccessful siege on one year before, Rommel carefully assembled strong strike forces for its attack over a two day period. He might not have been so cautious, for the fortress was not in this case held by tough confident Australian troops, but by unexperienced South African and Indian troops who had just witnessed the complete collapse of their army and were naturally very shaken.

The attack was launched at dawn on the 20th of June (Scenario 9) in the best of Blitzkrieg traditions. The fortress was surrendered unceremoniously before dawn the next day and yielded the biggest bag of booty that had ever been won in the desert by either side.

Characteristically, Rommel's thoughts were not on Tobruk at all but rather down the coast at Alexandria and the Suez Canal—and El Alamein.

References

1. *Metals Under Impulsive Loads*
2. *The Effect of System Design Characteristics on First Round Hitting Probability of Tank Fired Projectiles*, **BRL Memorandum Report**
3. **"AFV 4, Light Tanks M1-M5" , Profile Publications**
4. **"AFV 8, Crusader-Cruiser Mark VI", Profile Publications**
5. **"AFV 11, M3 Medium (Lee/Grant)", Profile Publications**
6. **"AFV 6, Valentine Mark III", Profile Publications**
7. **"Armor in Profile, No. 15, Infantry Tank Mk. II Matilda", Profile Publications**
8. **"AFV 1, Panzerkampfwagen III", Profile Publications**
9. **Bellona Military Vehicle Prints, Series 32**
10. **"Armor in Profile, No. 8, Panzerkampfwager IV", Profile Publications**
11. **Bellona Military Vehicle Prints Series Ten.**
12. **"Armor in Profile, No. 14, M13/40", Profile Publications**
13. *Tank Data*, **WE Inc. publishers**
14. *Kampfpanzer 1916-1966*, **Dr. F. M. Von Senger and Etterlin author**
15. *Armor*, **R. M. Ogorkiewicz author**
16. *German Secret Weapons of WWII*, **Lusar author**
17. *German Tanks 1923-1945*, **Senger und Etterlin author**
18. **TM-E30-451,** *Handbook of German Military Forces*, **War Department technical manual**
19. **TM-E30-420,** *Handbook of Italian Military Forces*, **War Department technical manual**
20. *German Infantry Weapons of WWII*, **Barker author**
21. *British and American Infantry Weapons of WWII*, **Barker author**
22. *Modern War in Miniature*, **Korns author**
23. *Weapons and Tactics, Hastings to Berlin*, **Weller author**
24. *The Rommel Papers*, **Liddell Hart editor**

For those interested in the design of *Tobruk*, the following References are suggested. For all players a small selection of books can make the Gazala Battles and the desert war very clear through reading. They are:

Rommel **by Desmond Young**
Rommel as a Military Commander **by Ronald Lewin**
Tobruk **by Michael Carver**
Tobruk, the Story of a Seige **by Anthony Heck-stall Smith**
The Sidi Rezeg Battles and
Crisis in the Desert **by J. A. I. Agar-Hamilton and L. C. F. Tucker**

The Mediterranean and the Middle East, **4 volumes by I. S. O. Playfair (the British Official History)**
The Foxes of the Desert **by Paul Carrell**
Brazen Chariots **by Robert Crisp**
Take These Men **by Cyril Joly**
With Rommel in the Desert **by H. W. Schmidt**

The Tanks **by B. H. Liddell Hart**
Afrika Korps **by K. J. Macksey, M.C.**
Bir Hakim **by Richard Holmes and, of course,**
The Rommel Papers **edited by B. H. Liddell Hart**
Panzer Battles **by F. W. VonMellenthin**

The Age of Great Guns **by Frank Comparato**
The Guns 1939-45 **and**
Grenades and Mortars **by Ian V. Hogg**
German Anti-Tank Guns
Infantry Weapons **by John Weeks**
West of Alamein **compiled by Col. G. B. Jarrett**

Weapons Effectiveness

Three guidelines influenced the design of *Tobruk* and were adhered to wherever possible in each stage of the game's development. The first and foremost was the requirement that the effectiveness and pecularities of *weapons* were to be emphasized in the game rather than *operations* and *tactics* as had been stressed in previous wargames. Weapons effectiveness analysis was to be conducted in a manner which was much more complete than in other games, and this analysis was to be reduced to a workable, playable methodology using the best possible tools to include the digital computer. Fortunately, procedures and data were uncovered during the research for *Tobruk* which made the fulfillment of this guideline possible, and these procedures and data will be discussed further on.

Second, it was planned that no data or methodology used in the game's design was to be so complex or difficult to find that the average player of the game could not obtain it and perform his own weapons analysis or historical comparison should that be his desire. In general, this requirement was satisfied and most of the design materials listed throughout this booklet should be available to any player, although he may have to go to some effort such as requesting Inter-Library Loan or similar procedure to obtain them. Some materials, however, such as very old (pre-WWII) artillery firing tables, etc., are of such a rare nature as to be unavailable without considerable research and where this has been the case, and the data extracted from these sources judged to be of enough importance to anyone wishing to investigate the *Tobruk* design process, the data has been enclosed where appropriate.

An interesting sidenote is in order here. In doing the massive research necessary for proper effectiveness analysis, it was discovered that some detailed data items about many of the weapons were still officially classified and therefore, of course, unusable in the game. There were two reasons for this, the first being that many materials had just simply been overlooked when downgrading became justifiable and the second that, oddly enough, many of the British and Axis weapons involved in the Gazala Battles are still in use throughout the world today. When absolutely required for a given weapon, such data items were estimated based on unclassified data from similar weapons.

The third and final guideline was that of giving the defender the advantage in any doubtful battle resolution. This guideline was strictly adhered to whenever any uncertainty existed. For example, most weapons in the game have much higher possible rates of fire than are represented and used in the effectiveness analysis. The problem is that these higher rates of fire could only be used under very special circumstances which, giving the defender the advantage of the doubt, were assumed to be ignorable except in certain identifyable cases (such as final defensive fires, barrages, etc.). The point is clear that on a battlefield such factors as confusion, obsecuration and less than perfect knowledge of the enemy all work in the defender's behalf but can't be easily modelled in a game. This guideline simply reduces the effect of such unplayable factors.

Under these three guidelines, the weapons' effectiveness analyses of *Tobruk* were conducted in the following ways.

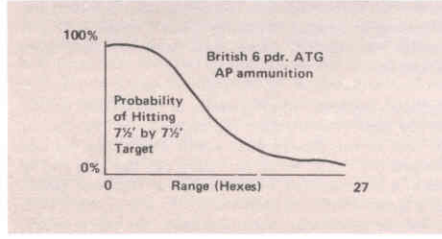
A. Anti-armor weapons

The defeat of an enemy armored target by direct-fire is a problem of the foremost magnitude. The question "Will this projectile defeat this target at this range?" may at first seem to be rather simple to answer by just comparing projectile penetration to armor thickness and making a yes or no decision based on that. In actuality, however, the problems involved are so complicated that, even at today's state of ballistics and metallurgy, the only sure way of answering the question is by taking the target out and shooting at it with the weapon of interest. Reference 1 discusses these problems in some detail but obviously for use in *Tobruk* the solution just mentioned was impractical and assumptions and approximations had to be made.

In general, the entire problem could be boiled down into three questions as related in the rules:

1. Has the target been hit?
2. Where has the target been hit?
3. What has the hit done to the target?

Reference 2 gives a detailed and very satisfactory method for answering the first question provided some data about the firing weapon is known. In general, "quasi-battle' conditions are assumed existing on the field with projectile shape, stability, and especially muzzle velocity determining whether or not a given target is hit at a given range. For each weapon used in *Tobruk*, these parameters were either found in references listed later or could be safely assumed, and probability of hit curves such as the example below could be generated for each and converted into dice rolls for use in the Hit Probability Tables.



Question 2 could in a similar way be answered by making a few assumptions about all targets and then a detailed analysis of each. The general assumptions were:

a) The aimpoint on each target was roughly in the center of the target.
b) The only areas on the target which could be hit were the areas facing toward the firing weapon. For example hits scored on the side plates of a target which by definition is facing the weapon with its front are ignored and so on.
c) The hits scored on the target are divided according to the amount of area each portion of the target presents to the firing weapon. For example, suppose the Front Upper Hull plate of a tank target constituted 1/3 of the total presented area of the tank when viewed directly from the front, then it would be assumed that 1/3 of the hits scored on the front of the tank landed on that plate. In reality, this is not mathematically accurate but for use in *Tobruk*, quite acceptable.

With these assumptions, the projected areas of each target were analyzed using references 3 through 13 and Area Impacted tables built for AFV.

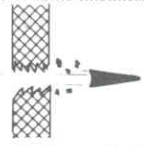
Finally, the incredibly complicated problem of question 3, whether or not the target was damaged if hit, had to be addressed. First and foremost, range dependent armor penetration data for each weapon of interest had to be gathered and from among literally dozens of sources, the data of references 14 through 18 was accepted for initial use. Second, armor specifics for each possible target had to be obtained and vulnerable areas of each target were extracted.

With this basic mass of data the following step by step procedure was followed to determine the results of *each* possible projectile/area impacted combination in the game. With only five British and six Axis target AFV types, incidentally, this meant 1284 separate and distinct evaluations had to be performed:

Step 1: Armor "penetration" data is usually based on static firings of weapons against armor plates of average quality which, in the jargon of metallurgy is called homogeneous armor. Perforation or piercing of the same plate is a considerably harder task, however, and what this basic perforation capability of the projectile against homogeneous armor had to be calculated.

Step 2. All Pz.III, Pz.IV and Stuart tanks in the game were protected in certain vital areas by armor of considerably different characteristics than that of homogeneous armor by virtue of being hardened to resist attack. The effect of this hardening had to be considered inasmuch as it could either add to or subtract from the vehicle's protection depending upon the size of the impacting projectile.

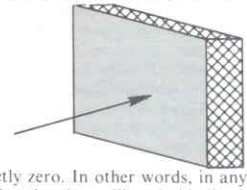
Step 3. All armor plates, whether homogeneous or hardened, protect the vehicle by different amounts depending upon their sloping with respect to the attacking projectile. This sloping is not simply the slope of the plate with respect to vertical, but is also the extra slope of the plate in the ground plane and neither effect can be ignored. This is such a complex problem that an illustration is in order for better understanding. Assume we have an armor plate of some thickness being fired at:



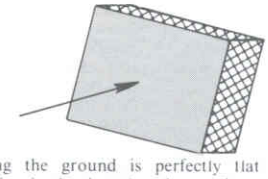
and which can be pierced when vertical.

Sloping of that plate may cause the attacking projectile to either ricochet or even shatter depending upon the projectile type and the hardness of the plate.

But the sloping "bonus" enjoyed by the plate must be evaluated taking into account that, mathematically, the probability of the plate lying exactly perpendicular to the line of fire as shown below (from the top):



is exactly zero. In other words, in any actual battlefield condition the plate will probably lie at some angle to the line of fire such as illustrated below:



Assuming the ground is perfectly flat (not a bad assumption in the desert) and assuming a straight-line projectile flight to the target plate (a bad assumption anywhere but one which gives the defender the advantage), it can be safely assumed that the plate's vertical slope is constant. The *horizontal* slope, however, definitely varies as the target faces the firing weapon differently. For example, by definition in the game, a vehicle being engaged from the "front" may actually be sitting with up to a 30 degree horizontal angle with respect to the line of fire. As mentioned before, hits scored on the target's side plates in this case are not counted, but that 0 degree—30 degree bonus to the receiving plate cannot be realistically ignored, especially when it has a very significant impact on whether or not the vehicle is damaged. During the desert war, incidentally, German panzer crews were instructed to approach the enemy at an angle, so that this horizontal slope bonus was maximized.

A serious problem arises, however, in trying to account for this horizontal bonus in a realistic way. For example, in the case illustrated above the target could be assumed to be always facing at the maximum angle of 30 degrees, but this would really be giving too much of a break to the defender and, of course, assuming the opposite being true, that of only a 0 degree facing would be unfair to him. A method had to be developed to account for this effect in

a probabilistic way, and to do in such a way as to not encumber the play of the game with for example another dice roll. Needless to say, after much effort such a method was discovered and the IMPACT computer program written to implement it into the game. Without going into any details of the IMPACT procedures, be it enough to say that all important effects, such as plate hardness and projectile type, were analyzed, and the result was such that this probabilistic horizontal sloping bonus was amalgamated into the Area Impacted Table for each AFV target. This means, for instance, that say 1/3 of a target's total frontal aspect was composed of its front lower hull plate which would represent 12 out of 36 (the maximum number of different results of rolling two dice) "Front Lower Hull" hits on its Area Impacted Table. With the bonus of the target's random facing factored in by the use of IMPACT, these 12 hits might be reduced to perhaps 8, with the other four being defined as ricochets caused by the target's facing at some angle.

This is not a perfect solution, obviously, but it at least accounts for the problem to some extent and certainly enough for a commercial wargame like *Tobruk*. Even the partial solution as just described (briefly by the way) has a terrific impact on the play of the game. Just notice how difficult it is to get a hit to "stick" to the front of a Pz.III J Special and this should become apparent.

Step 4. Once a projectile is defined as having hit a target and not ricocheted, it must be determined whether or not the projectile (or its fragments if shattered) has pierced the plate and what damage was done. An almost straight comparison of piercing power vs. armor effective thickness may be made to answer the first part, and an analysis of target internal layout and projectile design can answer the second. One example of this process should be sufficient to illustrate.

Suppose at a range of 6 hexes a Pz.III J Special using the 50mm long weapon had scored a Front Lower Hull hit on a Honey tank. A quick comparison of the effective armor thickness of the Honey at this point (70mm) and the armor piercing ability of the 50mm long APCBC (normal armor-piercing ammunition) at this range (71mm) shows that indeed the round has gotten into the Honey. At this spot in the tank, however, is located the transmission and final drive mechanisms behind which sit the driver and hull machine gunner. Since the round has barely managed to break through the armor plate in front of the final drive assembly, it simply doesn't have enough remaining momentum (kinetic energy) to continue through the assembly itself and kill or injure one or both of these two crewmen and so they can be considered safe. However, the mechanisms of the assembly most certainly will have been damaged by the round itself or the fragments of armor plate which it probably blew into the assembly upon entering, and so the mobility of the Honey has probably been destroyed and thus, an 'M' kill scored. Finally, the 50mm APCBC round, like most German and Italian ammunition, was cleverly designed to explode after piercing into a target and, in this case, the portion of target entered happens to contain inflammable fluids. The combination of these factors produces a high probability of fire, and thus the '(P4)' result as well.

All of this, and one M(P4)≤6 is placed on the Honey sheet with 1283 additional evaluations, some trivial, some very complex, needed to be done for analyzing the AFV's involved in the game.

B. Gunfire Anti-personnel Weapons

Compared to the above, the evaluations of these weapons was relatively simple. In general, any rifle, submachine-gun, light machinegun or medium machinegun may be evaluated as having a probability of inflicting a kill or serious (battle incapacitant, all lighter wounds were ignored in *Tobruk*) wound on a certain number of man-targets as a function of the:

1. Weapon's rate of fire to include loading times, stoppages, cyclic rate of fire, and burst fire tactics to avoid overheating.

2. Range from the firing weapon(s) to the target unit and the probability of one round from the weapon hitting one man in the target at that range.

3. The motion or cover state of the target being fired upon.

References 20 through 22 provided enough data for the calculations of these variables for each weapon in the game and references 18, 19, and 23 provided the basic numbers and types of weapons used by the personnel units of each side. When combined, a firepower value in the form of Gunfire Factors for each personnel unit at all possible ranges was calculated for each type of unit.

Further elaborating will not be done here, but if interested, a player may refer to the above references, especially number 22, (although erroneous in spots) for more details of this process and data.

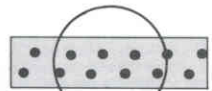
C. Artillery and Mortar Weapons

The evaluation of the effectiveness of these weapons is strongly affected by a set of assumptions not required in the evaluation of the previous two types. These assumptions are very broad, but not unreasonable for a board wargame. Briefly, they are:

1. Any artillery (including direct-fire) or mortar weapon can be assumed to have associated with it a "CEP", or Circular Error Probable, figure which very simply represents the radius of a circle centered at the target within which 50% of the ammunition fired by that target will land. This CEP is definitely range-dependent; that is, the closer to a target that the firing weapon is, the smaller the CEP will become although, for some technical reasons, it will never reach zero (perfect accuracy).

2. Any target may be approximated by a circle on the ground of some radius RT. As an example, a tank may be approximated by such a circle:

as can a section of infantry:



and so on.

3. Any munition type, such as an Italian 81mm mortar round for example, may have associated with it some "lethal radius" (RL) within which a target may be damaged or destroyed. For example, the 81mm round just mentioned may be described as having an RL against an infantry target of 7.0 meters, within which any man target will probably be killed or seriously wounded by the fragments or blast from the exploding round. Against a tank target, for example, this RL for damaging or destroying the tank will obviously be considerably less.

Under these three assumptions, then, the effectiveness of fires against various targets may be analyzed. The equations for this analysis are in common use throughout the military Operations Research community and won't be referenced here; although most OR textbooks and papers discuss them and their derivations in detail. They consist of:

1. Probability of hitting a target, PH:

$$PH = 1 - e^{-0.693\left(\frac{RT}{CEP}\right)^2}$$

(where e = 2.718)

2. Fractional coverage of a target F by one round of lethal radius RL:

$$F = \left[\frac{\pi RT^2\,(2P)}{360} - \frac{RT^2\,\mathrm{Sin}\,(2P)}{2} + \frac{RL^2\,(2S)}{360} - \frac{RL^2\,\mathrm{Sin}\,(2S)}{2}\right] \frac{R}{SIG}\, 2 \geqslant e^{\frac{R^2}{SSIG^2}}$$

where R is the distance from the burst to the target, P, S, and SIG parameters.

3. And the fractional coverage FKN of a target with N rounds each covering the target by amount F as calculated above:

$$FKN = 1 - (1 - F)^N$$

Using these three equations, plus other assumptions peculiar to *Tobruk* targets, the artillery and mortar effectiveness may be calculated and, working backwards, related to casualty production so that the same Casualty Table used by gunfire weapons may be utilized. Errors again occur in doing this, but for use in *Tobruk* they are safely ignorable. Artillery battery specifics input to this calculation include the size of each battery (always four guns or howitzers except the 75mm(F) which was six guns) and the individual weapon rates of fire which will be related later. Dud rates of ammunition were also considered, and surprisingly enough found to be significant

Systems Specifics

A. BOARD

The board chosen for use with *Tobruk* requires little comment because there is little to it. The 75 meter hex was chosen to allow for reasonable manouver on the board while prohibiting the longest-range weapon used, the 88mm FLAK, from completely commanding an engagement. In addition, the CEP's of all artillery and mortar weapons used in the game are such that a 75 meter hex will probably receive most of their fire and rounds falling in adjacent hexes may be ignored. There is no terrain of any kind on the board for two reasons. First, the actual terrain upon which most of the Gazala battles were fought is indeed very flat and featureless. Any "terrain" protection desired by the combatants in general had to be provided by they themselves through entrenchments and concealment. Second and most important, though, it was discovered through play-test of *Tobruk* predecessors that almost any terrain feature of any kind on a battlefield of this size (about 2 miles by 3 miles) absolutely dominates in the play of the game. As discussed in the Introduction, *Tobruk* is intended to be a game of weapons and personnel, and not one of tactics as dictated by terrain. Rommel himself in his Papers (reference 24) related exactly this feeling when he wrote:

"Of all theaters of operations, it was probably in North Africa that the war took on its most advanced form. The protagonists on both sides were fully motorized formations, for whose employment the flat and obstruction-free desert offered hitherto undreamed of possibilities. It was the only theater where the principles of motorized and tank warfare, as they had been taught theoretically before the war, could be applied to the full-and further developed. It was the only theater where the pure tank battle between major formations was fought."

B. VEHICULAR UNITS

Each vehicle type used by either side during the Gazala Battles was very unique in performance and pecularities. References 3 through 13 list these specifics in detail but a short list of the most important items will be presented here for completeness.

1. British:

Nomenclature	— U.S. M3 Light tank "Honey" or "Stuart"
Weight	— 13 tons
Maximum road speed	— 36 mph
Flat desert speed	— 23 mph
Maximum armor	— 38mm
Crew	— 4; 2-man turret
Weapons	— 1 37mm M6, 2 .30 cal Browning MMG's
Use in Gazala Battles	— Main battle tank when necessary.
Comments	— Light, fast and reliable vehicle. Not well suited to the role of battle tank but used as one anyway. Surprisingly good armor for light vehicle, very accurate main gun. Two man turret was a slight liability.

Nomenclature	— Cruiser Mk II, Crusader II
Weight	— 19 tons
Maximum road speed	— 28 mph
Flat desert speed	— 22 mph
Maximum armor	— 49mm
Crew	— 5; 3-man turret
Weapons	— 1 2 pounder, 2 Besa MMG
Use in Gazala Battles	— Main battle tank.
Comments	— Very unreliable vehicle with a weapon not equal to any other on the field. Disliked by its crews and not feared by the enemy. Very combustible when hit. Poorly arranged armor which good speed could never overcome. Close Support (C.S.) version had 3" howitzer mainly for firing smoke.

Nomenclature — U.S. M3 Medium "Grant"
Weight — 30 tons
Maximum road speed — 26 mph
Flat desert speed — 17 mph
Maximum armor — 57mm
Crew — 6; 3-man turret, 2-man sponson
Weapons — 1 75mm M2, 1 37mm M6, 3 .30 cal Browning MMG
— Main battle tank.
— Key British tank in battle. Very heavy armor and two powerful weapons—on fast and very reliable chasis.

Nomenclature — Infantry Tank Mk III, Valentine II
Weight — 16 tons
Maximum road speed — 15 mph
Flat desert speed — 11 mph
Maximum armor — 65mm
Crew — 3; 2-man turret
Weapons — 1 2-pounder, 1 Besa MMG
Use in Gazala Battles — Infantry support tank, battle tank when needed.
— Very well built and reliable equipment. Slow speed, 2-pounder gun and two man crew limited battle effectiveness. Very thick and well-placed armor.

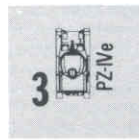
Nomenclature — Infantry Tank Mk II, Matilda II
Weight — 27 tons
Maximum road speed — 15 mph
Flat desert speed — 11 mph
Maximum armor — 78mm
Crew — 4; 3-man turret
Weapons — 1 2-pounder, 1 Besa MMG
Use in Gazala Battles — Infantry support tank, battle tank when needed.
Comments — Very slow vehicle with limited effectiveness due to 2-pounder main gun. Very expensive to build due to cast hull. Replaced by Valentine before El Alamein.

2. Axis

Nomenclature — Panzerkampfwagen III, Model H
Weight — 19. 5 tons
Maximum road speed — 24 mph
Flat desert speed — 17 mph
Maximum armor — 60mm
Crew — 5; 3-man turret
Weapons — 1 50mm L/42, 2 MG34 MMG
Use in Gazala Battles — Main battle tank.
Comments — The heart of the Afrika Korps. Fast, reliable and well armed although short 50mm unable to cope with Grant. Extra bolted on hard armor was an effective counter to most British weapons.

Nomenclature — Panzerkampfwagen III, Model J, Special
Weight — 23 tons
Maximum road speed — 25 mph
Flat desert speed — 17 mph
Maximum armor — 77mm
Crew — 5; 3-man turret
Weapons — 1 50mm L/60, 2 MG34 MMG
Use in Gazala Battles — Main battle tank.
Comments — Very dangerous vehicle—only real match for Grant on field but only 19 with DAK on 26 May. Long gun very accurate and lethal although it was the most powerful which could fit into the turret and thus the Pz. III series stopped developing at this point. Like H, hard extra armor very difficult to defeat.

Nomenclature — Panzerkampfwagen IV, Model E
Weight — 22 tons
Maximum road speed — 26 mph
Flat desert speed — 17 mph
Maximum armor — 60mm
Crew — 5; 3-man turret
Weapons — 1 75mm L/24, 2 MG34 MMG
Use in Gazala Battles — Support tank, battle tank if needed.
Comments — Good, reliable tank like Pz. III but next to useless in tank battle due to short gun. Could bombard enemy from up to 3000 meters even while moving with lethal HE, however. A few "Special" version of the Pz. IV with the new long-barreled 75mm were used beginning at Bir Hacheim but not included in game.



Nomenclature — Sd. kfz. 139, Marder III
Weight — 11 tons
Maximum road speed — 26 mph
Flat desert speed — 17 mph
Maximum armor — 52mm
Crew — 4; 2-man gun position
Weapons — 1 76.2mm(r), 1 MG 37 MMG
Use in Gazala Battles — Tank destroyer.
Comments — Effective use of modified captured Russian field gun on captured Czech chasis. Gun was so powerful that British at first thought that self-propelled 88mm FLAK guns had been introduced. Open top, limited gun traverse, and two-man gun crew limited overall effectiveness.

Nomenclature — Carro Armato Tipo M13/40
Weight — 14 ton
Maximum road speed — 20 mph
Flat desert speed — 11 mph
Maximum armor — 50mm
Crew — 4; 2-man turret
Weapons — 1 47mm L/32, 3 Breda 38 MMG
Use in Gazala Battles — Main battle tank.
Comments — Slow, "self-propelled coffin" with weak armor everywhere but the turret front. Good gun but not good enough to prevent many Italian tankers from being killed in battle. Unreliable, highly combustible when pierced.

Nomenclature — Obice DA 75/18, Semovente
Weight — 14 tons
Maximum road speed — 19 mph
Flat desert speed — 11 mph
Maximum armor — 50mm
Crew — 4; no turret
Weapons — 1 75mm L/18
Use in Gazala Battles — Support field gun
Comments — Basically the same vehicle as the M13/40 but with field gun instead of anti-tank gun. Same weaknesses as M13/40 but could fire effective HE shell like German Pz. IV out to long range even while on the move.

C. Weapon Units

Even though weapons are identified as being used by one side or the other, it must be stressed that both sides in the desert made extensive use of captured weapons whenever possible. The reason for this was that, unlike AFV's, weapons in general required no special supplies of spare parts or maintenance equipment to be kept in operation and can be set up and used with far less training than in the case of an AFV. The following lists the most important data for each weapon type used in the game by either side:

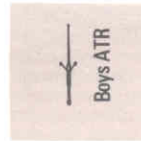
1. British

Nomenclature — Muzzle Loading Mortar, 2"
Weight in action — 10 lb.
Crew — 1-man
Ammunition generally used — HE
CEP (indirect fire) — 5—20 meters
Rate of fire — 12 rpm
Ammunition dud rate — —
HE round lethal radius — 1.6 meter
Comments — Standard British light mortar. Still in use after Korean War and highly prized by British infantry.

Nomenclature — Medium Mortar, 3"
Weight in action — 126 lb.
Crew — 6-men
Ammunition generally used — HE, smoke
CEP (indirect fire) — 8-33 meters
Rate of fire — 10 rpm
Ammunition dud rate — —
HE round lethal radius — 7.1 meters
Comments — Standard British medium mortar still in use although modified. Suffered from short range in desert and, like all British munitions, from small lethal radius of fragmentation due to use of poor grade metals in shells.

Nomenclature — .303 Vickers Medium Machine-gun
Weight in action — 42 lb.
Crew — 6-men
Ammunition generally used — Ball, tracer
CEP (indirect fire) — —
Rate of fire — 500 rpm (cyclic)
Ammunition dud rate — —
HE round lethal radius — —
Comments — World War I design using Maxim action. Reliable, effective and given up, unhappily, by the British infantry only long after the war. Like 3" mortar, usually attached to infantry companies when needed in sections of two.

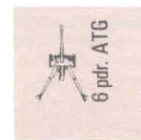
Nomenclature — .55 inch Boys Anti-tank Rifle
Weight in action — 36 lb.
Crew — 1-man
Ammunition generally used — Armor piercing incendiary
CEP (indirect fire) — —
Rate of fire — 15 rpm
Ammunition dud rate — —
HE round lethal radius — —
Comments — Heavy weapon notable, and feared, for three times the kick of a shotgun but with almost no armor-piercing capability. Inasmuch as it could damage light vehicles and break the track of any tank, it was still of use until shaped charge weapons became generally available in 1943.



Nomenclature — 2 pounder anti-tank gun
Weight in action — 1.8 tons
Crew — 5-men
Ammunition generally used — AP non-explosive shot only
CEP (indirect fire) — —
Rate of Fire — 22 rmp
Ammunition dud rate — —
HE round lethal radius — —
Comments — Standard British ATG at beginning of war but obsolete by 1942. At Gazala still main ATG although supposedly replaced in artillery units by 6 pounder. Small, uncapped shot shattered easily on German hard armor.

Nomenclature — 40mm Anti-aircraft Gun (Bofors)
Weight in action — 2.4 tons
Crew — 6-men
Ammunition generally used — HE, AP
CEP (indirect fire) — —
Rate of fire — 120 rpm (cyclic)
Ammunition dud rate — —
HE round lethal radius — 1.6 meters
Comments — Swedish design standardized as medium AAA by many countries and still in use today. Effective in main role but secondary role as ATG limited by sights.

Nomenclature — 6 pounder Anti-tank Gun
Weight in action — 1.22 tons
Crew — 5-men
Ammunition generally used — AP non-explosive shot only
CEP (indirect fire) — —
Rate of fire — 15 rpm
Ammunition dud rate — —
HE round lethal radius — —
Comments — Excellent hard-hitting piece. Only 112 in hands of Royal Artillery units of Eighth Army at start of battle. Like 2 pounder, no HE shell available which limited use. Impressive performance convinced American army to adopt as 57mm ATG.



Nomenclature — French 75mm gun, Model 1897 MI
Weight in action — 1.3 tons
Crew — 6-men
Ammunition generally used — HE, smoke, AP
CEP (indirect fire) — 22 meters
Rate of fire — 12 rpm
Ammunition dud rate — 30%
HE round lethal radius — 12 meters
Comments — World War I French main field gun.

Used by Free French at Bir Hacheim both as artillery and ATG. Limited range and high ammunition failure rate due to age limited use, but six-gun battery and high rate of fire made battery fires very effective. Grant main gun based upon it.

Nomenclature	— 25 pounder gun—howitzer
Weight in action	— 1.8 tons
Crew	— 8-men
Ammunition generally used	— HE, AP, smoke
CEP (indirect fire)	— 42 meters
Rate of fire	— 6 rpm
Ammunition dud rate	— 20%
HE round lethal radius	— 13.6 meters
Comments	— Standard British field gun until long after the war. Effective as artillery and when necessary as ATG although lack of suitable sight limited range.

4.5 inch gun

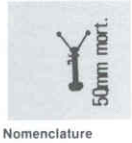
Nomenclature	— 4.5 inch Gun
Weight in action	— 5.7 tons
Crew	— 9-men
Ammunition generally used	— HE, smoke
CEP (indirect fire)	— 45 meters
Rate of fire	— 2 rpm
Ammunition dud rate	— 20%
HE round lethal radius	— 17 meters
Comments	— Standard British medium piece in service at Gazala. Long range and good accuracy at range made piece very effective and well respected.

155mm Howitzer

Nomenclature	— U.S. 155mm Howitzer M1
Weight in action	— 6.3 tons
Crew	— 9-men
Ammunition generally used	— HE, smoke
CEP (indirect fire	— 47 meters
Rate of fire	— 2 rpm
Ammunition dud rate	— 15%
HE round lethal radius	— 19.9 meters
Comments	— Standard U.S. medium howitzer still in use today. Used in conjunction with 4.5" gun by British in medium batteries at Gazala.

2. German

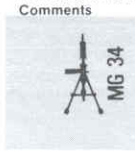
Nomenclature	— 5 cm. Granatwerfer 36 (50mm mortar)
Weight in action	— 31 pounds
Crew	— 2-men
Ammunition generally used	— HE
CEP (indirect fire)	— 5—20 meters
Rate of fire	— 12 rpm
Ammunition dud rate	— 15%
HE round lethal radius	— 2.7 meters
Comments	— Very effective light weapon but like British 2" and Italian 45mm usefulness in desert limited due to short range. Powerful HE shell. Very heavy compared to 2".



Nomenclature	— 8 cm. Granatwerfer 34 (81mm mortar)
Weight in action	— 125 pounds
Crew	— 6-men
Ammunition generally used	— HE and smoke
CEP (indirect fire)	— 7—42 meters
Rate of fire	— 12 rpm
Ammunition dud rate	— 15%
HE round lethal radius	— 7.5 meters
Comments	— Very effective weapon usually attached to infantry company in half-platoons of three weapons. Longer range than British 3".

Nomenclature	— Pz. B. 39 (7.92mm ATR)
Weight in action	— 28 pounds
Crew	— 1-man
Ammunition generally used	— AP with tear gas filler
CEP (indirect fire)	— —
Rate of fire	— 10 rpm
Ammunition dud rate	— —
HE round lethal radius	— —
Comments	— Light, handy weapon but like .55 cal Boy s hopelessly outclassed by average British tank. It could, however, at least break tracks and so was retained until shaped charge weapons became available.

Nomenclature	— 7.92mm MG34 Medium machine-gun
Weight in action	— 42 pounds
Crew	— 4-men
Ammunition generally used	— Ball, AP
CEP (indirect fire)	— —
Rate of fire	— 800 rpm (cyclic)
Ammunition dud rate	— —
HE round lethal radius	— —
Comments	— Same weapon as section MG34 except equipped with heavy tripod which allowed more accuracy and longer bursts. Like section weapon, high rate of fire produced ammunition supply problem. Usually attached to company in half-platoons with two weapons.



Nomenclature	— 2.8 cm. S.Pz.B.41 (28/20 PAK)
Weight in action	— 491 pounds
Crew	— 3-men
Ammunition generally used	— Armor piercing composite non-rigid, HE
CEP (indirect fire)	— —
Rate of fire	— 10 rpm
Ammunition dud rate	— —
HE round lethal radius	— .14 meters
Comments	— First production military weapon to use "squeeze-bore" principle to gain high velocity (4550 ft/sec) projectile. Small sight and instability of ammunition limited accurate range but tungsten carbide projectile could pierce almost any British tank.

Nomenclature	— 5 cm. PAK 38 (50mm PAK)
Weight in action	— 2145 pounds
Crew	— 6-men
Ammunition generally used	— APCBC, APCR, HE
CEP (indirect fire)	— —
Rate of fire	— —
Ammunition dud rate	— —
HE round lethal radius	— 7.5 meters
Comments	— Standard German ATG and main gun on Pz. III J Special. High velocity and excellent sights gave high accuracy, but special APCR ammunition required to defeat heavier British armor. Lethal HE shell for use against soft targets.

Nomenclature	— 7.5 cm. LIG
Weight in action	— .39 tons
Crew	— 5-men
Ammunition generally used	— HE, smoke
CEP (indirect fire)	— 35 meters
Rate of fire	— 6 rpm
Ammunition dud rate	— 15%
HE round lethal radius	— 11.1 meters
Comments	— Infantry support weapon for bringing of direct fire onto resistant targets. Although antiquated, retained and used by German army unit end of war. Kept in support companies of rifle regiments along with 150mm version (SIG) not included in game. Attached to company in sections of two.

Nomenclature	— 8.8 cm. FLAK 36
Weight in action	— 5.5 tons
Crew	— 11-men
Ammunition generally used	— APCBC, HE
CEP (indirect fire)	— 24 meters
Rate of fire	— 15 rpm
Ammunition dud rate	— 10%
HE round lethal radius	— 16.0 meters
Comments	— Most famous German weapon of war. Excellent medium anti-aircraft gun, excellent field gun when needed, but most famous as anti-tank gun, especially in desert. High-quality optics and stable platform gave most accuracy of any weapon at Gazala. High velocity projectile and high rate of fire rounded out the threat to tanks. Weapon itself, however, was large, vulnerable to fragmentation, and heavy. These weaknesses were corrected in 88mm ATG's later in war.

105mm Howitzer

Nomenclature	— 10.5 cm. L.F.H. 18 (105mm howitzer)
Weight in action	— 2 tons
Crew	— 6-men
Ammunition generally used	— HE, smoke
CEP (indirect fire)	— 38 meters
Rate of fire	— 6 rpm
Ammunition dud rate	— 15%
HE round lethal radius	— 16.7 meters
Comments	— Standard Germany army field howitzer until end of war. Effective, well-designed piece equal in performance to 25 pounder or American 105mm.

150mm Howitzer

Nomenclature	— 15 cm. S.F.H. 18 (150mm howitzer)
Weight in action	— 5.4 tons
Crew	— 8-men
Ammunition generally used	— HE, smoke
CEP (indirect fire)	— 49 meters
Rate of fire	— 2 rpm
Ammunition dud rate	— 15%
HE round lethal radius	— 23 meters
Comments	— Standard German medium howitzer. Companion piece to 105mm L.F.H. 18.

105mm Gun

Nomenclature	— 10.5 cm. K18 (105mm gun)
Weight in action	— 5.5 tons
Crew	— 8-men
Ammunition generally used	— HE, smoke
CEP (indirect fire)	— 30 meters
Rate of fire	— 6 rpm
Ammunition dud rate	— 15%
HE round lethal radius	— 16.7 meters
Comments	— Standard German long range gun. With 150mm K18 formed basis of DAK Army Artillery. Because of long range, both weapons especially useful for counter-battery fires.

150mm Gun

Nomenclature	— 15 cm. K18 (150mm gun)
Weight in action	— 12.5 tons
Crew	— 8-men
Ammunition generally used	— HE, smoke
CEP (indirect fire)	— 42 meters
Rate of fire	— 2 rpm
Ammunition dud rate	— 15%
HE round lethal radius	— 23 meters
Comments	— Companion piece in Army Artillery to 10.5 cm. K18. By far longest-ranged weapon in game.

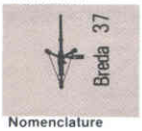
3. The Italians

Nomenclature	— 45mm M35 Brixia (45mm mortar)
Weight in action	— 34 pounds
Crew	— 2-men
Ammunition generally used	— HE
CEP (indirect fire)	— 5—20 meters
Rate of fire	— 25 rpm
Ammunition dud rate	— 20%
HE round lethal radius	— 0.7 meter
Comments	— Equivalent weapon to British 2" or German 50mm. Threw "Red Devil" grenades at very high rate out to same range as other two mortars. Its use in the desert was therefore limited. Attached to company in sections of three weapons.

Nomenclature	— 81mm M35 (81mm mortar)
Weight in action	— 129 pounds
Crew	— 6-men
Ammunition generally used	— HE, smoke
CEP (indirect fire)	— 6—39 meters
Rate of fire	— 18 rpm

Ammunition dud rate	— 20%
HE round lethal radius	— 7.0 meters
Comments	— Best mortar in desert. Outranged British and German equivalents. High rate of fire, accuracy and lethality made it very effective. Usually attached to rifle company in sections with one weapon.

Nomenclature	— 8mm Medium machine-gun (Breda 37)
Weight in action	— 83 pounds
Crew	— 6-men
Ammunition generally used	— Ball, AP
CEP (indirect fire)	— —
Rate of fire	— 450 rpm (cyclic)
Ammunition dud rate	— —
HE round lethal radius	— —
Comments	— Standard MMG and best Italian machine-gun. Complicated design led to problems in the desert due to dust.



Nomenclature	— 20mm Heavy machine-gun (20mm Breda)
Weight in action	— 680 pounds
Crew	— 4-men
Ammunition generally used	— AP, HE
CEP (indirect fire)	— —
Rate of fire	— 120 rpm (cyclic)
Ammunition dud rate	— —
HE round lethal radius	— 0.2 meter
Comments	— Heavy weapon for anti-aircraft, anti-tank and anti-personnel use. Limited anti-tank capability but high rate of fire proved it to be dangerous. British put to use all they could capture.

Nomenclature	— 47mm L/32 Breda (47mm ATG)
Weight in action	— 1160 pounds
Crew	— 6-men
Ammunition generally used	— AP, HE
CEP (indirect fire)	— —
Rate of fire	— 15 rpm
Ammunition dud rate	— —
HE round lethal radius	— 6.2 meters
Comments	— Standard support and anti-tank weapon of Italian army. Usually attached to infantry company in platoons of 2 weapons apiece. Light enough to be manhandled at slow speed.

105 Howitzer

Nomenclature	— 105mm L/28 Ansaldo (150mm howitzer)
Weight in action	— 2 tons
Crew	— 6-men
Ammunition generally used	— HE, smoke
CEP (indirect fire)	— 35 meters
Rate of fire	— 6 rpm
Ammunition dud rate	— 25%
HE round lethal radius	— 13.5 meters
Comments	— Standard Italian field howitzer but never in enough quantity to replace older weapons. As good as German 105 or British 25 pounder.

149mm Gun

Nomenclature	— 149mm L/40 Ansaldo (149mm gun)
Weight in action	— 5.4 tons
Crew	— 8-men
Ammunition generally used	— HE, smoke
CEP (indirect fire)	— 45 meters
Rate of fire	— 2 rpm
Ammunition dud rate	— 25%
HE round lethal radius	— 18.9 meters
Comments	— By far the best Italian medium piece; on rough par with 4.5" British.

D. STUKAS

Nomenclature	— Ju—87-BI "Stuka"
Speed	— 210 mph
Crew	— 2-men
Armament in game	— one-500 Kg. demolition bomb four-50 Kg. fragmentation bombs

The Stuka dive-bomber is as infamous as probably any other weapon of war before or since. In the minds of German tactic planners such as Rommel, however, the Stuka was not regarded as being decisive nor, for that matter, even remarkably effective except for use in its very clearly defined tactical role—that of the "heavy artillery" of the mobile divisions. In this role it indeed excelled, and as such was a critical part of the concept of the Blitzkrieg or lightning war about which so much has been written.

In the desert, however, the Stukas really weren't all that useful simply due to the lack of suitable targets for them except in rare cases. It's somewhat wasteful to use an 1100 pound (500kg) bomb against a target that one anti-tank projectile could destroy. Nevertheless, the Stukas were massively used by the Germans (the Italians flew them also, incidentally) whenever the proper opportunity arose, such as when attacking Bir Hacheim or the Tobruk perimeter and whenever "heavy artillery" was needed.

In the game, the Stukas used are assumed to carry only one of several possible bombloads and their use for ground strafing is not allowed. They are assumed to always be "on call" (Luftwaffe officers were usually attached to ground units like FO's) and are assumed to bomb in the following way:

Release altitude	— 1500 feet
Release flight angle	— 80°
Impact angle	— 85°

which produces a CEP of 33 meters for the large bomb and 35 meters for each of the small ones. Their lethal radii against personnel are 38 meters and 23 meters respectively.

E. Personnel Units

All personnel units in *Tobruk* are different in composition, both in men and in weapons. In general, these compositions may be found in sources to be referenced later, but it must be remembered that on the field in the real battle standardization rarely existed. Losses from engagement to engagement could almost never be fully replaced and as the campaign progressed personnel units of all types would change as to what weapons were carried by individuals in the units. For example, German infantry sections would grab up as many extra MG34 light machineguns as became available as the battle wore on and so forth. In the game, however, no easy way existed to model such improvisation and so every personnel unit is assumed to be as described in the organization tables or "TO&E's".

The basic *Tobruk* personnel unit is, of course, the infantry section from which all larger units are built. The highest echelon which can be reached by either side in the game is a company, but a full-strength company might represent in the later stages of the battle a unit of batallion strength or even larger. If desired, additional *Tobruk* counter sets may be added together on the board to form larger standard units than one company, but in the desert a battlefield of the board size (about 2 miles by 3 miles) was about the correct size to allow for full movement of nothing much above a batallion and the mechanics of the game were designed with this limit in mind. (Players who build higher echelon units on the board run the risk of making the game unwieldy and not much fun to play.)

The companies on each side are represented in numbers of men and sub-unit composition on their respective roster charts, but some comments are in order as to the weapons and any special characteristics of each as used in the game.

1. British—The British desert infantry section contained 10 men composed of one non-commissioned officer (NCO) armed with an American Thompson sub-machinegun, two men operating .303 cal. Bren light machinegun and seven men armed with Enfield .303 cal. Mk.3 bolt-action rifles. The platoon is composed of three of these sections with a platoon headquarters section of seven men all armed with Enfields and the platoon leader HQ group itself of only two men, one of whom is assumed to carry a rifle and the other just a pistol. In the HQ section were usually located the platoon's 2" mortar and Boy's .55 cal. anti-tank rifle but these were often given to a rifle section to use when needed. The company was composed of three of these platoons plus the company commander HQ group of two men armed like the platoon leader's and nine-man section, each man armed with an Enfield. Every man in the company is assumed to carry the standard (No. 36) British handgrenade but no other special equipment. Reference 21 contains data about these individual weapons. Additional data and comment about the company and larger-echelon units may be found in Reference 23.

2. German—The German infantry section, like its British counterpart, was based upon one fast-firing automatic weapon around which the section's tactics were built. This weapon was the infamous MG34 (the British often referred to them as "Spandau's") belt-fed light machinegun—a weapon so lethal that virtually every modern day general purpose machinegun (like the US M60) is designed directly or indirectly from it. In the game, it is the MG34 alone which is responsible for the massive German section firepower. Two men are assumed to operate it with the rest of the section being armed with the 7.92mm Mauser G98/40 rifle with the squad leader carrying an MP40 sub-machinegun, but these weapons contribute very little to the section's effectiveness with the respect to the MG34. Note that with only one man remaining in the section, a fairly impressive firepower can still be placed on a target because it is assumed that he will always pick up the MG34 and use it instead of his own weapon.

As in the case of the British, a platoon is composed of three such sections with an 8 man platoon headquarters section and a 2 man HQ group. Unlike the British platoon, however, no light mortar or anti-tank rifle was directly controlled by the German platoon, rather three light mortars and three ATR's were carried by 9 man sections as company headquarters where one additional 10 man section was included. Note also that in this, the early part of the war, the German company was composed of four and not three platoons as were the British and Italian companies. Every German soldier is assumed to carry the standard stick grenade but again, no special equipment. Reference 18 contains completed data on the organization and weapons of the German company and higher echelons.

3. Italian—The Italian infantry section differed significantly from its British and German counterparts inasmuch as it was composed of 20 men and broken into two functional groups—a light machinegun group of 9 men and a rifle group of 11 men. Two standard 6.5mm M30 Breda light machineguns plus rifles were carried by the first group and the standard 6.5mm M91 Mannlicher-Carcano by the second. Both groups were headed by an NCO who was usually armed with the excellent 9mm M38 Beretta sub-machinegun. Two sections plus an HQ group formed the platoon and three platoons, 3 headquarters sections and the company HQ group formed the company. All company personnel are assumed to carry the M35 O.T.O. "Red Devil" hand-grenade but note that neither light mortars nor anti-tank rifles are part of the company. Any of these or heavier weapons had to be attached to the company from higher echelon units. All additional data about the Italian company or higher echelon organization or weapons may be found in reference 19.

The only other *Tobruk* personnel units, the CREW's and artillery forward observers, are assumed to be armed with the appropriate standard rifle and grenades only. The CREW's are composed of one NCO gun commander and the proper number of other ranks and the F.O. is assumed to consist of one officer only.

F. Obstacle/Fortification Units

1. The entrenchment counter does not represent rows of slit trenches as may be guessed but rather an area completely covered with personal entrenchments of "hedgehogs" which all sides found to be of most value in the desert. Since the hex containing an entrenchment counter is assumed to be completely covered with hedgehogs (not enough to impede wheeled or tracked vehicular travel though), more than one personnel unit is assumed to be able to find cover in the hex and the game is played in this way.

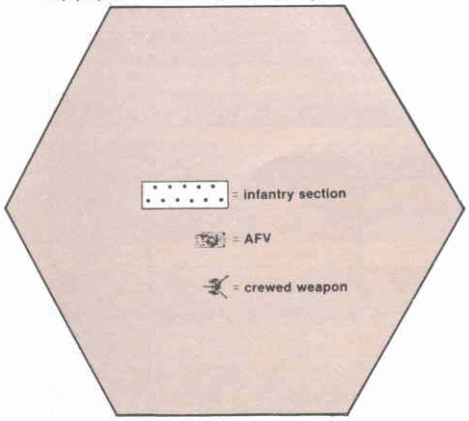
2. The bunker/blockhouse counter represents one large fortification. The bunker itself is a covered emplacement providing full cover and firing openings to personnel inside and doesn't differ much in construction from army to army. The blockhouse, however, is a very strongly-built concrete structure which, in the Gazala battles, was only found on the Tobruk perimeter. The blockhouses had been built by the Italians as part of the strengthening of the port defenses when they were in control of Tobruk before the British offensive of 1940 which drove them out. Although good emplacements, the British found the blockhouses to be more defensive rather than an offensive nature because troops inside could not fire out in any way, and this is how they are used in the game.

3. The weapon pit counter by definition contains one pit for a weapon to fit in and which provides suitable protection for the crew when not manning the gun.

4. The minefield counter laid by either side is assumed to contain a minefield patterned like the German 24 by 64 meter field as described in reference 18. Besides anti-tank mines, anti-personnel mines are assumed included in the field and an effective density of 4mines per meter of front is reached in the hex. Each field, of course, is assumed to contain the standard AT or AP mine types used by the side laying the field but like with other weapons, captured mines were used by all sides extensively. The operating characteristics of each type of mine do not differ from one another enough to justify differentiating the fields or their effectiveness.

5. The anti-tank trench counter is assumed to be completely cut across by the trench which is between 6 and 8 feet deep with reinforced walls and sometimes covered by boards. The trench hex is assumed to contain hedgehogs and the trench itself could obviously be used for cover.

All of the above units as well as those previously described should be thought of in terms of how large they were in real life for proper appreciation of their use in the game. The following illustration is an outline of one board hex with one tank, infantry section, and gun shown in scale to help players visualize this relationship.



Tactics

The purpose of *Tobruk* is to introduce battlefield problems to players through the medium of an enjoyable game. In playing, players should be able to quickly learn what does and does not work in the maneuvering and firing of units, but some comments about general tactics are in order.

A. Infantry

A single big mistake in the use of a force of infantry is usually enough to end a given game where they are important. On the attack, this error can occur by attempting to approach an enemy position in strength before the enemy is pinned down by fire. On the defense, it usually happens when units forsake their cover for any reason while under fire. In general, infantry, unlike AFV's, should never be "thrown" into a situation where fire may be brought against them. They should be used very carefully and players should realize, like Rommel, that their prime use in the desert is to occupy and hold terrain and inflict casualties on the enemy when he is compelled to erradicate them (such as in Scenario 8). Except when mechanized or when no AFV's are available, infantry should never be considered as part of a strike force. When forced to participate in an attack, under no circumstances should they be allowed to move toward the enemy without some supporting fire being placed on the area being assaulted. When in position on the defense, they should stay under full cover until the enemy is close enough to be badly damaged by fire. This may sometimes mean staying under full cover for good, and forcing the enemy to literally jump in the trench to get them out through melee. Properly used, infantry units may be very expensive to destroy.

B. Armored fighting vehicles

Rommel, as usual, sums up best the value of armor in the desert when he writes (reference 24):

"The armor is the core of the motorized army. Everything turns on it, and other formations are mere auxiliaries."

In the game three key tactical points on the use of armor are most notable. Very simply, they are:

—never offer enemy armor-piercing weapons a flank or rear shot except when there is no other alternative;

—never discount the threat of any enemy unit but engage the most threatening first and stay on it until desired damage is achieved, and

—never move for any reason other than for self protection or to establish a better firing position.

These three points apply equally well to armored vehicles on the defense or the attack. On the attack, armor, like infantry, should be supported by fire on the objective where possible. Enemy anti-tank guns should be constantly engaged by machineguns on the approach and finished off with direct fire as soon as possible. Enemy tanks should be outmanouvered and the prized flank or rear shot position against them achieved. Undoubtedly the worst approach tactic to be used against either ATG's or tanks is the direct approach with no fire on the enemy because, in general, any weapon can sooner or later at least immobilize any AFV. On the defense the best tactic as just described is that of remaining stationary, selecting the most lucrative targets one by one, and once firing on each has begun, not stopping until the target has been neutralized. Wherever possible the enormous advantage of taking partial cover in a weapon pit should be exploited. Friendly infantry should be positioned with or around dug in tanks to prohibit the approach of enemy infantry and the positioning of the tanks themselves should be such that outflanking is difficult. When properly positioned and protected, AFV's in weapon pits probably represent the most formidable obstacle to any enemy advance.

C. Artillery

The use of offboard artillery in the scenarios of *Tobruk* should be in the role of direct support of the maneuver units on the board. What this means is that players would best use artillery available for the purpose of helping units achieve specific tasks, rather than use it as just another available weapon for destruction of enemy targets. The best example of this is in the use of artillery to blind enemy positions with smoke thus aiding in the approach of units toward the area being blinded. Artillery definitely may be used for destruction of enemy units on the board, of course, but the most vulnerable enemy targets, personnel in the open and masses of soft vehicles, rarely appear in any *Tobruk* scenario. Note that no provision has been made in the game for the use of the heavy (above 150mm) artillery, which was in the armies of both sides during the Gazala Battles. This is because, except in Scenarios 2, 5, 8 and 9, the heavy artillery of both sides was unavailable for use due to the fluid state of the engagements. Also, as in the case of the Stuka, no really suitable targets for large-caliber fire existed on either side in the Gazala area. The weapons were used when available, of course, but for typical desert targets field and medium pieces were suitable.

In general, three missions are possible for the use of artillery batteries in the game. They are:

—Destruction missions—where HE fires are brought onto point targets for the purpose of destroying them through direct hits;

—Neutralization missions—where HE fires are brought onto area (personnel or soft vehicles in the open) targets for the purpose of inflicting casualties through fragmentation and;

—Harassment missions—where smoke or HE fires are brought onto any target for the purpose of blinding it, forcing it to button up, forcing it to seek cover or forcing it to move.

Due to the highly mobile nature of most of the game scenarios and the limitations of artillery (long adjustment times, poor direct hit probabilities with respect to direct-fire weapons, limited shifting of fires for effect) most of the artillery fire missions seen on the board will probably be for harassment.

As in the case of direct fire, once any mission is commenced against a target, it is extremely bad tactics to cease fire before the desired result of the mission is achieved.

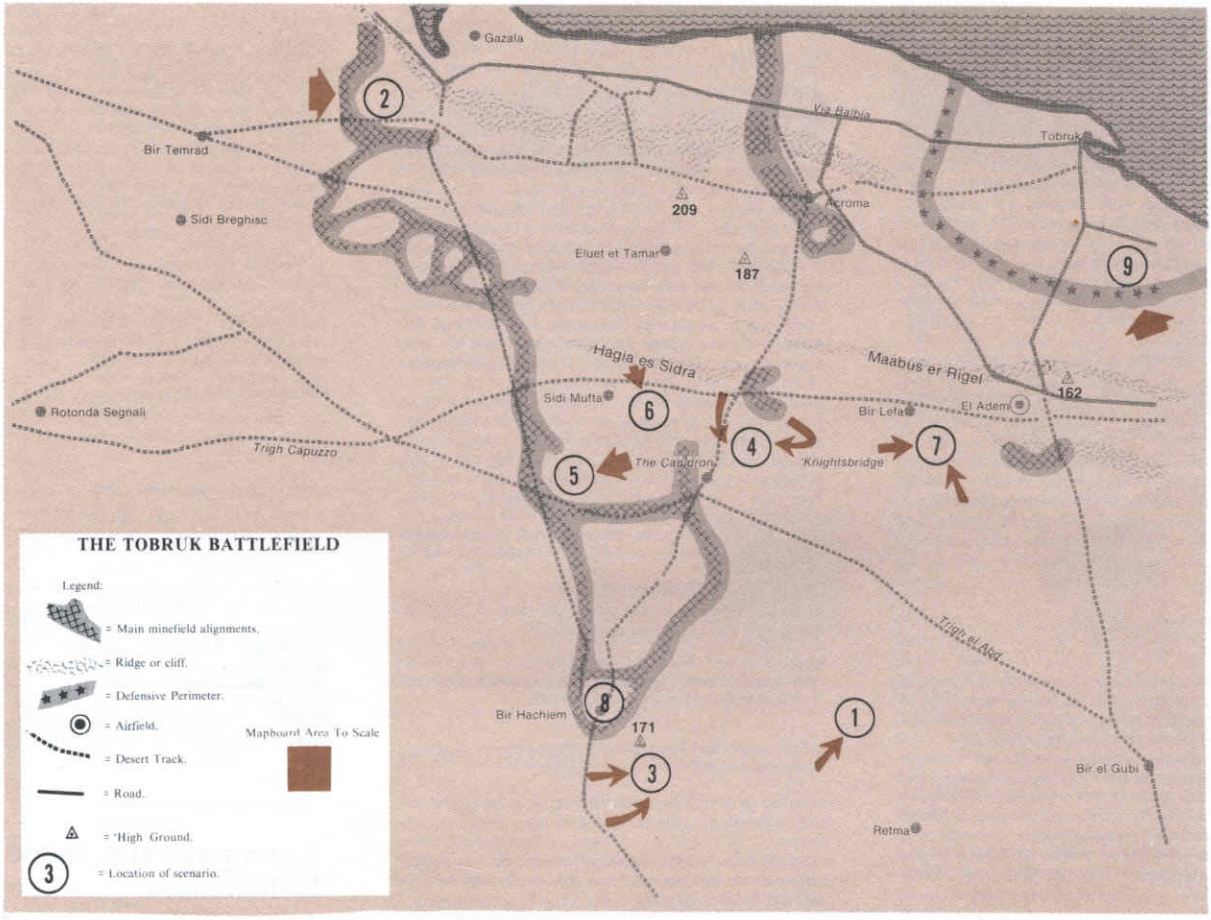
Comments and Game Deficiencies

Tobruk, like any other game, had to be built within many limitations imposed by the fact that reality can't ever be perfectly modelled. In the case of this game, however, additional constraints arose because of the complexity of the methodologies used for describing combat results. The effect of this was very simply that many vehicles and weapons used by both sides in the actual Gazala Battles were not included in the game. These included the light tanks, armored cars, and early model medium tanks used by both sides and a weird assortment of non-standard vehicles and weapons used by the Germans who were very adept at putting anything of marginal value to use. Without a doubt, however, the inclusion of these extra pieces would have contributed little to the game and would have caused a great deal of extra complexity.

A little problem arose in the research for *Tobruk* when it was found that little data was available on British, German, or especially Italian small unit tactical doctrine. This showed up particularly in the areas of infantry-tank and infantry-artillery coordination. Where and how FO's, for example, were attached and what their procedures were was unknown, and so approximations based on U.S. Army doctrine were implemented and were probably within reason. This same approximation was used wherever other needed data was unavailable, but since all armies generally operate in the same way in combat, the modelling of unknowns around U.S. procedures is probably pretty accurate.

As mentioned before, as much emphasis as possible was placed in the game on the simulation of weapon effects. In some cases, however, such as in the case of determining methodologies for resolving the problems of morale, scientific data was completely absent and educated guesses had to be made. This subjective way of resolving these difficulties is obviously not perfect, but it was the best solution at hand especially in view of the fact that research into any area has its limits which must be recognized. In the design of *Tobruk*, these limits were often reached and the resulting game rule or procedure is therefore probably not near to perfect. Hopefully, though, no part of the *Tobruk* architecture is designed in an unrealistic or unreasonable way.

SITUATION MAP



GAME FUNCTION SUMMARIES

Use the following summary charts as a quick reference when all nine rules packages have been mastered. Note that these are SUMMARIES only; when doubt about a rule application arises, the text of the rules should always be consulted as the final authority.

HIT PROBABILITY NUMBER MODIFIERS:		
FUNCTION	HPN ADJUSTMENT:	REFERENCE:
Target Movement:	+1	I.F.1.b.2
Target in Weapon Pit:	+2	V.E.5.a
Target is 88mm FLAK:	-1	VI.B.3.b.
Target Sizing:	various	VII.B.1.
Target Flank Aspect:	-1	VII.B.2.
Burst on Target:	-3	VII.B.3
Target in Bunker:	+2	VII F.6

MORALE VALUE MODIFIERS:	
CONDITION	VALUE ADJUSTMENT:
In Field Emplacement:	+1
Friendly HQ Unit:	+2/+1*
Friendly AFV:	+2
Friendly Personnel Unit:	+1
Enemy Personnel Unit:	-1
Enemy AFV:	-2
Overrun:	-4
Surrendered Friendly Unit:	-4
*Italian HQ Groups.	

SPECIAL COVER STATE EVALUATIONS FOR PERSONNEL UNITS		
CONDITION/FUNCTION/STATUS	COVER STATE	REFERENCE
Operating Heavy Weapon unit:	GOOD	III.D.2.e.
Riding AFV's:	ASSAULT	V.G.3.c.
Operating ATG in Portee:	STATIONARY	V.G.1.d.
Operating MMG (251 & 250):	GOOD	VIII.D.3.b.
Crew Casualties $\leq$ 40mm:	RUNNING	VIII.E.1.d.
Firing From Bunker:	FULL	VIII.F.2.
Firing Into Bunker; same hex:	GOOD	VIII.F.5.
Grenade Casualty evaluation:	STATIONARY	VIII.G.1.a.
Close Assault Final Fire:	ASSAULT	EXP. RULES G.1.f.

FIRE EFFECTS ON WEAPON UNITS						
TYPE	GUNFIRE	FRAG	DIRECT HIT FROM:			OVERRUN
			ATR	AP	HE	
ATR	—	—	—	—	—	F-kill[1]
Light Mortar	—	—	—	—	—	F-kill[1]
Medium Mortar	—	—	F-kill	F-kill	F-kill[3]	F-kill[2]
Medium Machine gun	—	—	F-kill	F-kill	F-kill[3]	F-kill
Heavy Weapon Unit	—[4]	—[4]	F-kill	F-kill	F-kill	F-kill

NOTES:

1. If carried/operated by personnel unit = No Effect.
2. If under full cover = No Effect.
3. If indirect fire = No Effect.
4. Experimental Rules: Possible F-kill if 88mm FLAK or 25-pdr.
5. '—' = No Effect.

TURN SEQUENCE/FUNCTION SUMMARY		
REGULAR RULES FUNCTION	OPTIONAL RULES FUNCTION	EXPERIMENTAL RULES FUNCTION
PRE-GAME FUNCTIONS		
	(Pre-Assault Artillery dice roll.)	[AFV Base Load Determination.]
		[Ammo Carrier Designation.]
PRE-MOVEMENT FUNCTIONS		
Invert/Remove Smoke Counters.	(AFV Availability dice roll.)	[Stuka Counter-battery Designation.]
Spiked-Weapon Determination.	(Interceptor die roll.)	
	(Khamsin die roll.)	
MOVEMENT SEGMENT		
Side 'A' moves.		
Side 'B' moves.	(Alternate movement, unit for unit.)	
Identify Running movement.		[Identify Close Assaults.]
Identify Overruns.		
Identify Melees.		
Identify Dive-bomb Attacks.		
Anti-Aircraft dice roll.	(Minefield Forcing die roll.)	[Undulating Terrain die roll.]
COMBAT SEGMENT		
Side 'B' fires.	(Random first fire die roll: Alternate firing target for target.)	
Side 'A' fires.		
INDIRECT FIRE PHASE		
Stuka Attack resolution.		[Accidental Bombing die roll.]
Off-Board Artillery resolution.		['Will Not Fire' die roll.]
Mortar Fire resolution.		
On-Board Artillery resolution.		
Counter-battery Location die roll.		
DIRECT FIRE PHASE		
ATG, ATR, ARTY, and Personnel Direct Fire resolution.	(Grenade Attack resolution.)	[AFV Gunfire Damage die roll.]
	(Melee Final Fire.)	[Close Assault Final fire.]
	(Overrun Final Fire.)	
MORALE CHECK PHASE		
Check Melee units.		[Check Close Assault units.]
Check Other units.		[AFV Overrun Damage die roll.]
Remove Overrun Weapon units.		[Determine Surrender/ Rally status.]
MELEE SEGMENT		
Melee resolution die rolls.		[Close Assault die roll.]
		[Determine Capture Status.]

FIELD EMPLACEMENT CAPACITY SUMMARY				
TYPE	# PERSONNEL	# VEHICLE	# WEAPON	FULL COVER DEFEATED BY:
Hedgehog:	6 units.*	0	light only.	Any type of direct hit.
Weapon Pit:	6 units.*	1 (or)	1+crew.	Any type of direct hit.
Bunker:	11 men.*	0	1 (MMG).	Any direct hit from weapon larger than 75mm.
Blockhouse:	30 men.*	0	light only.	Any direct hit from any weapon larger than 105mm.
Anti-Tank Trench:	6 units.*	0	light only.	Any type of direct hit.
*Plus unlimited number of HQ groups.				

The AVALON HILL Game Company

4517 Harford Road, Baltimore, Md. 21214

BRITISH HIT PROBABILITY TABLE

TYPE OF UNIT FIRING	CREW			ROF			MG's						
AFV'S		GUN	AMMO	IN	ACQ	FRAG	TUR	HULL	1	2	3	4	5
Stuart	4	37mmM6	AP-HE	2	6	2	1a	1a	2	2	2	3	3
Grant	6	75mmM2	AP-HE	1	3	23	1a	2a	2	3	4	4	5
		37mmM6	AP-HE	2	6	2			2	2	2	3	3
Crusader II	5	2 pder	AP	3	6	–	1b	1b	2	2	3	4	5
Crusader CS	5	3" how	HE-S	1	3	9	1b	1b	3	5	7	8	9
Valentine II	3	2 pder	AP	2	6	–	1b	–	2	2	3	4	5
Matilda II	4	2 pder	AP	3	6	–	1b	–	2	2	3	4	5
WEAPON UNITS		TYPE	AMMO	ROF		FRAG	FOF		1	2	3	4	5
Boys ATR .55cal	I	ATR	AP	4	7	–	360°		2	3	4	4	5
2 pounder (40mm)	5	ATG	AP	5	11	–	360°		2	2	3	4	4
6 pounder (57mm)	5	ATG	AP	3	7	–	180°		2	2	2	3	3
75mm(f)	6	ATG	AP-HE	3	6	23	180°		2	3	4	4	5
25 pounder (86mm)	8	ARTY	AP-HE	1	3	29	360°		3	4	5	6	7
40mm Bofors	6	AAA	AP-HE	17	35	2	360°		2	2	3	3	4
2 inch (50mm)	I	mortar	HE	0	1	11	360° *		3	7	8	8	10
3 inch (76mm)	6	mortar	HE-S	0	1	22	360° *		7	7	7	8	9
MACHINE GUNS		TYPE					FOF		1	2	3	4	5
Browning (a)	–	MG (AFV)	–	–	–	–	–		49	38	26	19	15
Besa (b)	–	MG (AFV)	–	–	–	–	–		53	41	28	21	16
Bren (c)	–	MG(AFV)	–	–	–	–	–		14	11	7	6	4
Vickers (d)	6	MG	–	–	–	–	360°		66	52	35	26	21

KEY: **CREW** – Number of men in full-strength crew of weapon or AFV: **I** = weapon is light infantry weap
HE = high-explosive; **S** = smoke shell. **ROF** – (Rate-of-Fire) Indicates how many times weapon may fire i
FRAG – Number of fragmentation factors produced by each round of HE ammo fired. **MG's** – For AFV's
guns. Number indicates how many machine guns in that location; letter refers to type of machine gun as in
machine gun units; **360°** = all round field-of-fire; **180°** = weapon may fire towards front three hex sides onl
guns, numbers under 'Range in Hexes' section refer to number of gunfire factors produced at each range in
path between firing unit and target. **HIT PROBABILITY NUMBER** – Minimum number on roll of two dic

DAMAGE TABLES

AREA IMPACTED:

TARGET VEHICLE
Panzer III H

Dice Roll	2	3	4	5	6	7	8	9	10	11	12
Front	G	TUR	UH	LH	–	TR	–	–	–	GM	R
Flank	G	–	–	LH	TR	LH	UH	LH	TUR	–	R
Rear	–	–	–	H	–	TR	–	TUR	–	TR	R

WEAPON FIRING	FRONT				FLANK			REAR		R	G	TR
	UH	LH	TUR	GM	UH	LH	TUR	H	TUR			
Boys ATR	–	–	–	–	–	–	–	–	–	F≤4	F≤2	M≤3
2 pdr.	–	–	K/C2≤9 F/C2(P3) ≤15	F/C2(P3) ≤5	K/C2≤12 (P3)≤19	K/C1≤12 (P4)≤19	K/C2≤5 F/C2(P3) ≤10	–	K/C2≤10 F/C2(P3) ≤16	K/C2≤10 F/C2(P3) ≤15	F	M
37mm M6	–	–	K/C2≤12 F/C2(P3) ≤21	F/C2(P3) ≤5	K/C2	K/C1	K/C2≤5 F/C2(P3) ≤15	–	K/C2≤5 F/C2(P3) ≤22	K/C2	F	M
40mm Bofors	–	–	K/C2	K/C2≤10 F/C2(P3) ≤15	K/C2	K/C1	K/C2	M(P4)≤2	K/C2	K/C2	F	M
6 pdr.	K/C2≤6 C2(P3)≤10	M(P4)≤4	K/C3	K/C3≤18 F/C2 (P3) ≤24	K/C2	K/C1	K/C2	K≤10 M(P4)≤14	K/C3	K/C3	F	M
75mm(f) 75mm M2	C2(P3)≤7	–	K/C3	K/C3≤10 F/C2(P3) ≤17	K/C3	K/C1	K/C3	M(P4)≤3	K/C3	K/C3	F	M
25 pdr.	C2(P3)≤7	–	K/C3	K/C3≤10 F/C3(P3) ≤14	K/C3	K/C1	K/C3≤9 F/C2(P3) ≤14	M(P4)≤4	K/C3	K/C3	F	M

RANGE IN HEXES

6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	HIT PROBABILITY NUMBER
4	4	5	5	6	6	7	8	9	9	10	10	10	11	11	11	11	12	12	12	12	12	–	–	
6	6	7	8	9	9	10	11	12	12	12	12	–	–	–	–	–	–	–	–	–	–	–	–	
4	4	5	5	6	6	7	8	9	9	10	10	10	11	11	11	11	12	12	12	12	12	–	–	
5	6	7	7	8	9	10	10	10	11	11	12	12	12	–	–	–	–	–	–	–	–	–	–	
9	10	10	11	11	12	12	12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
5	6	7	7	8	9	10	10	10	11	11	12	12	12	–	–	–	–	–	–	–	–	–	–	
5	6	7	7	8	9	10	10	10	11	11	12	12	12	–	–	–	–	–	–	–	–	–	–	
6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
6	6	7	8	8	9	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
5	5	6	7	7	8	9	9	10	10	11	11	11	–	–	–	–	–	–	–	–	–	–	–	
4	4	5	6	7	7	8	8	9	9	9	10	10	10	11	11	11	11	12	12	12	12	–	–	
6	6	7	8	9	9	10	11	12	12	12	12	–	–	–	–	–	–	–	–	–	–	–	–	
8	9	9	10	10	11	11	12	12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
4	5	6	7	8	9	10	10	11	12	12	12	–	–	–	–	–	–	–	–	–	–	–	–	
11	11	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
9	10	10	10	10	11	11	11	11	11	11	11	11	12	12	12	–	–	–	–	–	–	–	–	
6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
12	11	9	8	7	7	6	6	5	5	4	4	4	–	–	–	–	–	–	–	–	–	–	–	GUNFIRE FACTORS
13	12	10	9	7	7	6	6	5	5	4	4	4	–	–	–	–	–	–	–	–	–	–	–	
3	3	3	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
16	15	12	11	9	9	8	8	7	7	5	5	5	–	–	–	–	–	–	–	–	–	–	–	

on, thus no separate crew. **AMMO** – Indicates types of ammunition weapon may fire: **AP** = armor-piercing; in one turn; **IN** = initial-target has not been 'acquired'; **ACQ** = acquired-target fired at in previous turn. s, indicates number, type and location of machine guns; **TUR** = turret machine guns; **HULL** = hull machine dicated on MACHINE GUNS section at bottom of chart. **FOF** – Indicates field-of-fire of weapon and ly; '*' = mortar units have a 360° FOF, but may not fire at less than one hex range. **NOTE**: For machine nterval and NOT to a Hit Probability Number. **RANGE IN HEXES** – Refers to number of hexes in shortest ce for direct hit on target; '–' = no hit possible; target may not be fired upon.

8144•

AREA IMPACTED

TARGET VEHICLE
Panzer III J

DICE ROLL	2	3	4	5	6	7	8	9	10	11	12
Front	G	TUR	LH	–	–	TR	–	–	–	UH	–
Flank	G	–	TUR	LH	TR	LH	UH	LH	–	–	R
Rear	–	–	–	TUR	–	TR	–	H	–	TR	R

WEAPON FIRING	FRONT				FLANK			REAR		R	G	TR
	UH	LH	TUR	GM	UH	LH	TUR	H	TUR			
Boys ATR	–	–	–	–	–	–	–	–	–	F≤4	F≤2	M≤3
2 pdr.	–	–	–	–	K/C2≤12 (P3)≤19	K/C1≤12 (P4)≤19	K/C2≤5 F/C2(P3) ≤10	–	K/C2≤10 F/C2(P3) ≤16	K/C2≤10 F/C2(P3) ≤15	F	M
37mm M6	–	–	–	–	K/C2	K/C1	K/C2≤5 F/C2(P3) ≤15	–	K/C2≤22 F/C2(P3) ≤27	K/C2	F	M
40mm Bofors	–	–	–	–	K/C2	K/C1	K/C2	K≤4 M(P3)≤10	K/C2	K/C2	F	M
6 pdr.	K/C2≤5 C2(P3)≤9	K/C1≤2 M(P4)≤9	F/C1(P3)≤1	–	K/C2	K/C1	K/C2	K≤13 M(P4)≤18	K/C2	K/C2	F	M
75mm(f) 75mm/M2	C2(P3)≤1	M(P4)≤2	–	–	K/C3	K/C1	K/C3	K≤3 M(P4)≤13	K/C3	K/C3	F	M
25 pdr.	C2(P3)≤3	M(P4)≤3	–	–	K/C3	K/C1	K/C3≤9 F/C3(P3) ≤14	K≤3 M(P4)≤9	K/C3	K/C3	F	M

CASUALTY TABLE

Target's Cover State	Die Roll	NUMBER OF GUNFIRE OR FRAGMENTATION FACTORS APPLIED TO TARGET									
		100-91	90-81	80-71	70-61	60-51	50-41	40-31	30-21	20-11	10-1
Stationary	1	5	4	3	2	2	1	0	0	0	0
	2	6	5	4	3	2	2	1	0	0	0
	3	6	5	4	3	2	2	1	1	0	0
	4	7	6	5	3	3	2	2	1	1	0
	5	7	6	5	4	4	3	2	1	1	0
	6	7	6	5	4	4	3	2	1	1	0
Assault (Running=x2)		100-91	90-81	80-71	70-61	60-51	50-41	40-31	30-21	20-11	10-1
	1	7	6	5	4	3	2	1	0	0	0
	2	8	7	6	5	4	2	1	1	0	0
	3	8	7	6	5	4	3	2	1	1	0
	4	9	8	7	5	4	3	2	1	1	0
	5	9	8	7	6	5	4	3	2	1	1
	6	9	8	7	6	5	4	3	2	1	1
Good		100-91	90-81	80-71	70-61	60-51	50-41	40-31	30-21	20-11	10-1
	1	2	2	1	1	0	0	0	0	0	0
	2	3	2	2	1	1	0	0	0	0	0
	3	3	3	2	2	1	1	1	0	0	0
	4	4	3	3	2	1	1	1	1	0	0
	5	4	4	3	3	2	2	1	1	0	0
	6	4	4	3	3	2	2	1	1	0	0

NUMBER OF CASUALTIES INFLICTED

MELEE TABLE

DIE ROLL	melee odds				
	1 to 2	1 to 1	2 to 1	3 to 1	4 to 1
1	A6	A4	A4	A2	A2/D4
2	A4	A2	A2	A2/D2	A2/D4
3	A4	A2	A4/D2	A2/D4	D6
4	A2	A2/D2	A2/D4	D4	D8
5	A2/D2	A2/D4	D4	D6	D8
6	A2/D4	A2/D4	D6	D8	D10

NOTE: Odds less than 1 to 2 are automatically attacker eliminated. Odds greater than 4 to 1 are automatically defender eliminated.

OFF-BOARD ARTILLERY DIRECT HIT AND FRAGMENTATION TABLE

TYPE	DICE ROLL NEEDED FOR DIRECT HIT:	FRAGMENTATION FACTORS
British:		
25 pounder	'2'	46
4.5" gun	'2'	33
155mm howitzer	'2'	37
75mm (f) gun	'2', '3', '4' or '12'	65
German:		
105mm howitzer	'2'	57
105mm gun	'2' or '12'	61
150mm howitzer	'2'	34
150mm gun	'2'	40
50 kg. bombs	'2'	40
500 kg. bomb	'2'	40
Italian:		
105mm gun	'2'	46
149mm howitzer	'2'	32

OFF-BOARD COUNTER-BATTERY MATRIX

British battery	German battery				Italian battery	
	105mm how.	105mm gun	150mm how.	150mm gun	105 gun	149mm how.
25 pounder	A/B	A	A	A	A	B
155mm howitzer	B	A	B	A	B	B
4.5" gun	B	A/B	B	A	B	B
75mm gun (f)	A	A	A	A	A	A

B=British counter-battery fire; A=Axis counter-battery fire; A/B=both may use counter-battery fire.

8410004

BRITISH GUNFIRE FACTOR TABLE

UNIT TYPE	NO. MEN	RANGE IN HEXES 1	2	3	4	5	6	7	8	9	10
CO HQ	9	79	59	45	26	18	18	9	9	9	9
	8	72	54	41	24	16	16	8	8	8	8
	7	65	49	37	21	14	14	7	7	7	7
any 1 HQ	6	58	44	33	18	12	12	6	6	6	6
	5	51	39	29	15	10	10	5	5	5	5
	4	44	34	25	12	8	8	4	4	4	4
any CREWS	3	37	29	21	9	6	6	3	3	3	3
	2	30	24	17	6	4	4	2	2	2	2
	1	23	19	13	3	2	2	1	1	1	1
	10	86	65	48	30	20	19	11	11	10	10
	9	79	60	44	27	18	17	10	10	9	9
	8	72	55	40	24	16	15	9	9	8	8
	7	65	50	36	21	14	13	8	8	7	7
any 1/1	6	58	45	32	18	12	11	7	7	6	6
	5	51	40	28	15	10	9	6	6	5	5
	4	44	35	24	12	8	7	5	5	4	4
	3	37	30	20	9	6	5	4	4	3	3
	2	37	30	20	9	6	5	4	4	3	3
	1	23	19	13	6	4	3	3	3	2	2
all HQ HQ 1 HQ	2	9	5	4	3	2	2	1	1	1	1
	1	7	5	4	3	2	2	1	1	1	1

GERMAN GUNFIRE FACTOR TABLE

UNIT TYPE	NO. MEN	RANGE IN HEXES 1	2	3	4	5	6	7	8	9	10
any CO HQ	11	64	51	37	22	11	11	11	11	11	11
	10	59	47	34	20	10	10	10	10	10	10
	9	54	43	31	18	9	9	9	9	9	9
	8	49	39	29	16	8	8	8	8	8	8
any 1 HQ	7	44	34	26	14	7	7	7	7	7	7
	6	39	31	23	12	6	6	6	6	6	6
	5	34	27	20	10	5	5	5	5	5	5
	4	29	23	17	8	4	4	4	4	4	4
any CREWS	3	24	19	14	6	3	3	3	3	3	3
	2	19	15	11	4	2	2	2	2	2	2
	1	14	11	8	2	1	1	1	1	1	1
	10	101	80	57	37	24	21	20	18	17	16
	9	96	76	54	35	23	20	19	17	16	15
	8	91	72	51	33	22	19	18	16	15	14
	7	86	68	48	31	21	18	17	15	14	13
any 1/1	6	81	64	45	29	20	17	16	14	13	12
	5	76	60	42	27	19	16	15	13	12	11
	4	71	56	39	25	18	15	14	12	11	10
	3	66	52	36	23	17	14	13	11	10	9
	2	66	52	36	23	17	14	13	11	10	9
	1	52	41	28	21	16	13	12	10	9	8
all HQ HQ 1 HQ	2	7	4	3	2	1	1	1	1	1	1
	1	5	4	3	2	1	1	1	1	1	1

ITALIAN GUNFIRE FACTOR TABLE

UNIT TYPE	NO. MEN	RANGE IN HEXES 1	2	3	4	5	6	7	8	9	10
any HQ/1	11	78	66	40	22	22	11	11	11	11	11
	10	72	61	37	20	20	10	10	10	10	10
	9	66	56	34	18	18	9	9	9	9	9
11/R	8	62	51	31	16	16	8	8	8	8	8
any rifle group	7	56	46	28	14	14	7	7	7	7	7
	6	50	41	25	12	12	6	6	6	6	6
any CREWS	5	44	36	22	10	10	5	5	5	5	5
	4	38	31	19	8	8	4	4	4	4	4
	3	32	26	16	6	6	3	3	3	3	3
all HQ HQ 1 HQ	2	26	21	13	4	4	2	2	2	2	2
	1	20	16	10	2	2	1	1	1	1	1
	9	54	43	27	20	16	11	9	9	9	7
	8	48	38	24	18	14	10	8	8	8	6
	7	42	33	21	16	12	9	7	7	7	5
	6	36	28	18	14	10	8	6	6	6	4
11/LMG	5	30	23	15	12	8	7	5	5	5	3
any LMG group	4	24	18	12	10	6	6	4	4	4	2
	3	24	18	12	10	6	6	4	4	4	2
	2	12	9	6	5	3	3	2	2	2	1
	1	12	9	6	5	3	3	2	2	2	1

8410004

INFANTRY AND CREW ROSTER

BRITISH

COMPANY HEADQUARTERS

HQ 2 1 / 12 8

CO HQ

9 8 7 6 5 4 3 2 1 / 12 11 10 10 9 9 8 7 7

FIRST PLATOON

1 HQ 2 1 / 12 8

1 HQ

7 6 5 4 3 2 1 / 12 11 9 7 6 5 5

1/1

10 9 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 6 5 4

1/2

10 9 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 6 5 4

1/3

10 9 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 6 5 4

SECOND PLATOON

2 HQ 2 1 / 12 8

2 HQ

7 6 5 4 3 2 1 / 12 11 9 7 6 5 5

2/1

10 9 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 6 5 4

2/2

10 9 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 6 5 4

2/3

10 9 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 6 5 4

THIRD PLATOON

3 HQ 2 1 / 12 8

3 HQ

7 6 5 4 3 2 1 / 12 11 9 7 6 5 5

3/1

10 9 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 6 5 4

3/2

10 9 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 6 5 4

3/3

10 9 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 6 5 4

CREWS

1: 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 5

2: 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 5

3: 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 5

4: 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 5

5: 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 5

6: 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 5

7: 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 5

8: 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 5

9: 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 5

10: 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 5

11: 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 5

12: 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 5

13: 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 5

14: 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 5

15: 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 5

16: 8 7 6 5 4 3 2 1 / 12 11 10 9 8 7 6 5

GERMAN

COMPANY HEADQUARTERS

HQ 2 1 / 12 10

CO HQ

10 9 8 7 6 5 4 3 2 1 / 12 11 11 10 10 10 9 9 8 7

HQ/ATR

9 8 7 6 5 4 3 2 1 / 12 11 10 10 10 9 9 8 7

HQ/M

9 8 7 6 5 4 3 2 1 / 12 11 10 10 10 9 9 8 7

FIRST PLATOON

1 HQ 2 1 / 12 8

1 HQ

8 7 6 5 4 3 2 1 / 12 11 11 10 8 7 6 5

1/1

10 9 8 7 6 5 4 3 2 1 / 12 12 11 11 10 9 7 6 5 4

1/2

10 9 8 7 6 5 4 3 2 1 / 12 12 11 11 10 9 7 6 5 4

1/3

10 9 8 7 6 5 4 3 2 1 / 12 12 11 11 10 9 7 6 5 4

SECOND PLATOON

2 HQ 2 1 / 12 8

2 HQ

8 7 6 5 4 3 2 1 / 12 11 11 10 8 7 6 5

2/1

10 9 8 7 6 5 4 3 2 1 / 12 12 11 11 10 9 7 6 5 4

2/2

10 9 8 7 6 5 4 3 2 1 / 12 12 11 11 10 9 7 6 5 4

2/3

10 9 8 7 6 5 4 3 2 1 / 12 12 11 11 10 9 7 6 5 4

THIRD PLATOON

3 HQ 2 1 / 12 8

3 HQ

8 7 6 5 4 3 2 1 / 12 11 11 10 8 7 6 5

3/1

10 9 8 7 6 5 4 3 2 1 / 12 12 11 11 10 9 7 6 5 4

3/2

10 9 8 7 6 5 4 3 2 1 / 12 12 11 11 10 9 7 6 5 4

3/3

10 9 8 7 6 5 4 3 2 1 / 12 12 11 11 10 9 7 6 5 4

FOURTH PLATOON

4 HQ 2 1 / 12 8

4 HQ

8 7 6 5 4 3 2 1 / 12 11 11 10 8 7 6 5

4/1

10 9 8 7 6 5 4 3 2 1 / 12 12 11 11 10 9 7 6 5 4

4/2

10 9 8 7 6 5 4 3 2 1 / 12 12 11 11 10 9 7 6 5 4

4/3

10 9 8 7 6 5 4 3 2 1 / 12 12 11 11 10 9 7 6 5 4

CREWS

1: 6 5 4 3 2 1 / 10 10 9 9 8 7

2: 6 5 4 3 2 1 / 10 10 9 9 8 7

3: 6 5 4 3 2 1 / 10 10 9 9 8 7

4: 6 5 4 3 2 1 / 10 10 9 9 8 7

5: 6 5 4 3 2 1 / 10 10 9 9 8 7

6: 6 5 4 3 2 1 / 10 10 9 9 8 7

7: 6 5 4 3 2 1 / 10 10 9 9 8 7

8: 6 5 4 3 2 1 / 10 10 9 9 8 7

9: 6 5 4 3 2 1 / 10 10 9 9 8 7

10: 11 10 9 8 7 6 5 4 3 2 1 / 12 12 11 11 11 10 10 9 9 8 7

11: 11 10 9 8 7 6 5 4 3 2 1 / 12 12 11 11 11 10 10 9 9 8 7

12: 11 10 9 8 7 6 5 4 3 2 1 / 12 12 11 11 11 10 10 9 9 8 7

13: 11 10 9 8 7 6 5 4 3 2 1 / 12 12 11 11 11 10 10 9 9 8 7

14: 11 10 9 8 7 6 5 4 3 2 1 / 12 12 11 11 11 10 10 9 9 8 7

ITALIAN

COMPANY HEADQUARTERS

HQ 2 1 / 12 6

HQ/1

10 9 8 7 6 5 4 3 2 1 / 12 11 10 8 6 4 4 3 3 3

HQ/2

10 9 8 7 6 5 4 3 2 1 / 12 11 10 8 6 4 4 3 3 3

HQ/3

10 9 8 7 6 5 4 3 2 1 / 12 11 10 8 6 4 4 3 3 3

FIRST PLATOON

1 HQ 2 1 / 12 5

11/LMG

9 8 7 6 5 4 3 2 1 / 12 11 9 7 6 5 3 3 2

12/LMG

9 8 7 6 5 4 3 2 1 / 12 11 9 7 6 5 3 3 2

11/R

11 10 9 8 7 6 5 4 3 2 1 / 12 10 8 7 6 5 4 4 3 2 2

12/R

11 10 9 8 7 6 5 4 3 2 1 / 12 10 8 7 6 5 4 4 3 2 2

SECOND PLATOON

2 HQ 2 1 / 12 5

21/LMG

9 8 7 6 5 4 3 2 1 / 12 11 9 7 6 5 3 3 2

22/LMG

9 8 7 6 5 4 3 2 1 / 12 11 9 7 6 5 3 3 2

21/R

11 10 9 8 7 6 5 4 3 2 1 / 12 10 8 7 6 5 4 4 3 2 2

22/R

11 10 9 8 7 6 5 4 3 2 1 / 12 10 8 7 6 5 4 4 3 2 2

THIRD PLATOON

3 HQ 2 1 / 12 5

31/LMG

9 8 7 6 5 4 3 2 1 / 12 11 9 7 6 5 3 3 2

32/LMG

9 8 7 6 5 4 3 2 1 / 12 11 9 7 6 5 3 3 2

31/R

11 10 9 8 7 6 5 4 3 2 1 / 12 10 8 7 6 5 4 4 3 2 2

32/R

11 10 9 8 7 6 5 4 3 2 1 / 12 10 8 7 6 5 4 4 3 2 2

CREWS

1: 11 10 9 8 7 6 5 4 3 2 1 / 12 10 9 8 7 7 6 4 3 3 3

2: 6 5 4 3 2 1 / 7 6 4 3 3 3

3: 6 5 4 3 2 1 / 7 6 4 3 3 3

8410004

TARGET AND DAMAGE ROSTER

ID#	damage	target acquired	ammo

ID#	damage	target acquired	ammo

TURN RECORD

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56
57	58	59	60				

ARTILLERY INDIRECT FIRE ROSTER

ID#	FO	target

GERMAN/ITALIAN HIT PROBABILITY TABLE

TYPE OF UNIT FIRING	CREW			ROF			MG'S									
AFV'S		GUN	AMMO	IN	ACQ	FRAG	TUR	HULL	1	2	3	4	5	6	7	8	9	10
Pzkw-III H	5	50mm short	AP-HE	2	4	10	1a	1a	2	2	3	3	4	4	5	6	6	7
Pzkw-III J	5	50mm long	AP-HE	2	4	10	1a	1a	2	2	3	3	3	4	4	4	5	5
Pzkw-IV E	5	75mm short	AP-HE-S	1	3	24	1a	1a	2	4	5	6	7	8	9	10	10	11
Marder III	4	76.2mm (r)	AP-HE	1	3	27	–	1b	2	2	3	3	4	4	5	5	6	6
M13/40	4	47mmM37	AP-HE	1	4	6	1c	2c	2	3	4	5	6	6	7	8	8	9
Semovente	4	75mm L/18	AP-HE-S	1	2	13	–	–	2	3	5	6	6	7	8	8	9	10
WEAPON UNITS		TYPE	AMMO	ROF		FRAG	FOF		1	2	3	4	5	6	7	8	9	10
7.92mm ATR	I	ATR	AP	3	5	–	360°		2	2	3	3	4	5	6	6	7	8
28/20mm PAK	3	ATG	AP-HE	3	5	1	180°		2	2	2	2	3	3	3	4	4	5
50mm long PAK	6	ATG	AP-HE	3	7	10	180°		2	2	3	3	3	4	4	4	5	5
47mm M37 (I)	6	ATG	AP-HE	3	7	6	180°		2	3	4	5	6	6	7	8	8	9
88mm FLAK	11	ATG	AP-HE	3	7	37	360°		2	3	3	4	4	4	4	5	5	5
20mm Breda (I)	4	AAA	AP-HE	7	15	1	360°		2	2	2	3	3	3	4	5	5	6
75mm LIG	5	Arty	HE-S	2	5	20	180°		3	5	6	7	8	9	9	10	11	11
50mm	I	mortar	HE	0	1	16	360°*		3	7	7	8	10	10	11	—	—	—
81mm	6	mortar	HE-S	0	1	30	360°*		7	7	7	7	8	8	8	9	9	9
45mm (I)	I	mortar	HE	0	1	11	360°*		3	5	6	7	8	10	10	—	—	—
81mm (I)	6	mortar	HE-S	0	1	31	360°*		5	6	6	6	6	7	7	7	7	8
APCR		GUN	AMMO	ROF		FRAG			1	2	3	4	5	6	7	8	9	10
Pzkw-III H	5	50mm short	APCR	2	4	—	—		2	2	3	3	4	4	4	5	6	6
Pzkw-III J	5	50mm long	APCR	2	4	—	—		2	2	2	3	3	3	4	4	5	6
Marder III	4	76.2mm(r)	APCR	1	3	—	—		2	2	3	3	4	4	4	5	5	6
50mm PAK	6	ATG	APCR	3	7	—	—		2	2	2	2	3	3	4	4	5	—
MACHINE GUNS		TYPE					FOF		1	2	3	4	5	6	7	8	9	10
MG-34 (a)	4	MG	—	—	—	—	360°		75	59	40	30	24	19	17	14	12	11
MG-37 (b)	–	MG (AFV)	—	—	—	—	—		53	41	28	21	16	13	12	10	9	7
Breda-38 (I) (c)	–	MG (AFV)	—	—	—	—	—		21	16	11	8	6	5	5	5	4	3
Breda-37 (I) (d)	6	MG	—	—	—	—	360°		49	38	26	19	15	12	11	9	8	7

For Key, see British Hit Probability Table.

DAMAGE TABLES

AREA IMPACTED:

TARGET VEHICLE
U.S. M3 (Med) 'General Grant'

DICE ROLL	2	3	4	5	6	7	8	9	10	11	12
Front	GM75	TUR	LH	–	–	–	TR	–	–	UH	R
Flank	TUR	–	UH	UH	–	LH	TR	LH	–	G	R
Rear	–	TUR	–	H	–	H	TR	H	–	H	R

WEAPON FIRING	FRONT				FLANK			REAR				
	UH	LH	TUR	GM 75	UH	LH	TUR	H	TUR	R	G	TR
7.92mm ATR	–	–	–	–	–	–	–	–	–	F37≤5	F75≤4	M≤4
20mm Breda (I)	–	–	–	–	C1(P2)≤1	(P3)≤1	–	–	–	K/C1≤2 F(P3)≤7	F75≤9	M≤9
28/20mm PAK	C1(P3)≤3	M(P4)≤3	–	F75(P3)≤2 F75≤9	C1(P3)	(P4)	F37/C2 (P3)≤3	M(P3)≤11	F37/C1 (P3)≤3	K/C2	F75	M
47mm M37 (I)	–	–	–	–	K/C3≤8 C3(P3)≤12	K≤8 M(P4)≤12	–	M(P5)≤10	–	K/C2	F75	M
50mm short	–	–	–	–	K/C3≤11 C3(P3)≤16	K≤11 M(P4)≤16	–	M(P5)≤15	–	K/C2≤17 C2(P4)≤23	F75	M
50mm short (APCR)	C1(P3)≤4	M(P4)≤5	–	F75(P3)≤6 F75≤9	K/C1≤8 C1(P3)≤11	(P4)≤11	K/C2≤4 F37/C2 (P3)≤7	K≤7 M(P3)≤11	F37/C2 (P3)≤7	K/C2≤14	F75	M
50mm long	C2(P4)≤2	M(P5)≤2	–	F75/C1 (P3)≤1 F75≤15	C2(P4)≤20	(P5)≤20	F37/C2 (P4)≤3	M(P5)≤18	F37/C2 (P4)≤3	K/C2≤28	F75	M
50mm long (APCR)	C1(P3)≤11	M(P4)≤11	K/C1≤1	F75(P3)≤15 F75≤21	K/C1≤19 C1(P3)≤25	K≤19 M(P4)≤25	K/C2≤12 F37/C2 (P3)≤17	K≤18 M(P3)≤24	K/C2≤12 F37/C2 (P3)≤17	K/C2	F75	M
75mm short	–	–	–	F75≤5	K/C3	K/C1	–	M(P5)≤10	–	K/C3	F75	M
75mm L/18	–	–	–	F75≤14	K/C3	K/C1	–	K	–	K/C3	F75	M
76.2mm (r)	K/C3≤18 C2(P5)≤25	K/C1≤14 M(P5)≤28	K/C3≤9 F37≤18	K/C2≤23 F75≤31	K/C3	K/C1	K/C3≤28	K	K/C3≤28	K/C3	F75	M
76.2mm (r) (APCR)	K/C2≤16 C1(P3)≤22	K/C1≤23 M(P4)≤27	C2(P3)≤6 F37≤21	K/C2≤24 F75/C1 (P3)≤28	K/C2	K	K/C2	K	K/C2	K/C2	F75	M
88mm FLAK	K/C5	K/C3	K/C3≤20 F37≤34	K/C3	K/C5	K/C3	K/C3	K	K/C3	K/C3	F75	M

RANGE IN HEXES

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

HIT PROBABILITY NUMBER

GUNFIRE FACTORS

Special: **APCR**—in advanced scenarios, the German player may fire APCR (armor-piercing composite-rigid) ammunition from listed AFV's and weapons. When doing so, use the Hit Probability Numbers in the APCR section.

AREA IMPACTED:

TARGET VEHICLE

Matilda II

DICE ROLL	2	3	4	5	6	7	8	9	10	11	12
Front	GM	UH	TUR	–	TR	–	–	–	–	LH	R
Flank	UH	TR	LH	–	–	LH	–	–	LH	TUR	R
Rear	H	–	H	–	TR	H	–	–	H	TUR	–

WEAPON FIRING	FRONT				FLANK			REAR		R	G	TR
	UH	LH	TUR	GM	UH	LH	TUR	H	TUR			
7.92mm ATR	–	–	–	–	–	–	–	M(P3)≤1	–	F/C1(P3)≤3	–	M≤3
20mm Breda (I)	–	–	–	–	–	–	–	M(P4)≤3	–	F/C1(P3)≤6	–	M≤6
28/20mm PAK	K/C1≤2 C1(P4)≤4	–	F/C1(P3)≤2	–	–	K/C1≤3 C1(P4)≤5	–	K	K/C1≤3 F/C1(P3)≤4	K/C1	–	M
47mm M37 (I)	–	–	–	–	–	C1(P5)≤2	–	K≤10 M(P5)≤14	–	K/C2	–	M
50mm short	–	–	–	–	–	C3(P5)≤2	–	K≤13 M(P5)≤18	–	K/C2≤17 F/C2(P4)≤23	–	M
50mm short (APCR)	K/C1≤2 C1(P4)≤3	K/C1≤1 M(P4)≤3	K/C2≤4 F/C1(P3)≤5	F/C2≤2 F/C1(P3)≤3	K/C2≤3 C2(P4)≤4	K/C1≤6 (P4)≤7	K/C2≤3 C1(P4)≤4	K≤12 M(P4)≤14	K/C2≤5 F/C1(P3)≤6	K/C1≤13	–	M
50mm long	C2(P4)≤3	–	–	–	–	K/C1≤4 C2(P5)≤8	–	K≤18 M(P5)≤23	F/C2(P4)≤4	K/C2	–	M
50mm long (APCR)	K/C1≤8 C1(P4)≤10	K/C1≤6 M(P4)≤9	K/C2≤11 F/C1(P3)≤13	K/C2≤7 F/C1(P3)≤9	K/C2≤10 C1(P4)≤11	K/C1≤15 (P4)≤18	K/C2≤10 C1(P4)≤12	K≤25 M(P4)≤29	K/C2≤10 F/C1(P3)≤14	K/C1≤26	–	M
75mm short	–	–	–	–	–	–	–	K	–	K/C3	–	M
75mm L/18 (I)	–	–	–	–	–	–	–	K	–	K/C3	–	M
76.2mm (r)	K/C2≤22 C1(P5)≤29	M(P5)≤2	K/C3≤14 F/C3(P5)≤21	C2(P4)≤2	C3(P5)≤8	K/C2	K/C3≤7 C3(P5)≤12	K	K/C3≤23 C3(P5)≤29	K/C3	–	M
76.2mm (r) (APCR)	K/C1≤18 C1(P4)≤21	K/C1≤14 M(P4)≤20	K/C2≤24 F/C1(P4)≤27	K/C2≤18 F/C2(P3)≤20	K/C3≤20 C2(P4)≤23	K/C1	K/C3≤21 C2(P4)≤24	K	K/C2≤23 C2(P4)≤27	K/C3	–	M
88mm FLAK	K/C3	K≤8	K/C3	K/C3≤3 C3(P5)≤7	K/C4≤9 C3(P5)≤18	K/C2	K/C3≤16 C3(P5)≤24	K	K/C3	K/C3	–	M

DAMAGE TABLES

TARGET VEHICLE
Crusader II
(and Crusader C.S.)

AREA IMPACTED:

DICE ROLL	2	3	4	5	6	7	8	9	10	11	12
Front	TUR	UH	–	–	TR	UH	–	–	–	LH	GM
Flank	–	UH	TUR	UH	–	UH	LH	TR	LH	LH	R
Rear	H	–	–	TUR	TR	H	H	H	–	–	R

WEAPON FIRING	FRONT				FLANK			REAR		R	G	TR
	UH	LH	TUR	GM	UH	LH	TUR	H	TUR			
7.92mm ATR	–	–	–	–	C1(P3)≤2	(P5)≤3 (P3)≤6	–	M(P2)≤1	–	F/C1(P3) ≤3	–	M≤5
20mm Breda (I)	–	–	–	–	C1(P4)≤4	K/C1≤9 (P4)≤13	–	M(P3)≤3	–	F/C1(P3)≤7 F≤11	–	M≤11
28/20mm PAK	K/C1≤8 C1(P3)≤10	K/C1≤7 C1(P4)≤9	K/C2≤6 C2(P3)≤8	K/C2≤3 C1(P3)≤4	K/C2	K/C1	K/C2≤8 F/C2(P3) ≤11	K	K/C2≤7 F/C2(P3) ≤10	K/C2	–	M
47mm M37 (I)	K/C2≤4 C2(P4)≤8	K/C2≤2 C2(P4)≤6	K/C3≤2 F/C2(P4) ≤5	–	K/C3	K/C1	K/C2≤5 F/C2(P4) ≤9	K≤10 M(P4)≤14	K/C2≤4 F/C2(P4) ≤8	K/C3	–	M
50mm short	K/C2≤7 C2(P4)≤11	K/C2≤5 C2(P4)≤10	K/C3≤2 F/C2(P4) ≤8	–	K/C3≤20	K/C1	K/C2≤8 F/C2(P4) ≤13	K≤13 M(P4)≤18	K/C2≤6 F/C2(P4) ≤11	K/C3	–	M
50mm short (APCR)	K/C1≤9 C1(P3)≤12	K/C1≤9 C1(P4)≤11	K/C2≤7 F/C1(P3) ≤9	K/C2≤4 F/C1(P3) ≤7	K/C2≤15	K/C1≤19	K/C2≤8 F/C2(P3) ≤9	K≤12 M(P4)≤14	K/C2≤8 F/C2(P3) ≤10	K/C2	–	M
50mm long	K/C2≤12 C2(P4)≤16	K/C2≤10 C2(P4)≤14	K/C3≤8 F/C2(P4) ≤13	C2(P4)≤4	K/C3≤25	K/C1	K/C2≤13 F/C2(P4) ≤17	K≤18 M(P4)≤23	K/C2≤11 F/C2(P4) ≤15	K/C3	–	M
50mm long (APCR)	K/C1≤22 C1(P3)≤25	K/C1≤21 C1(P4)≤24	K/C2≤18 F/C1(P3) ≤21	K/C2≤15 F/C1(P3) ≤18	K/C2	K/C1	K/C2≤18 F/C2(P3) ≤21	K≤26 M(P4)≤28	K/C2≤20 F/C2(P3) ≤23	K/C2	–	M
75mm short	C2(P3)≤4	C2(P5)≤2	–	–	K/C4	K/C2	C3(P5)≤8	K	C3(P5)≤3	K/C3	–	M
75mm L/18 (I)	K/C2≤4 C2(P5)≤13	C2(P5)≤9	F/C3(P5) ≤5	–	K/C4	K/C2	K/C3≤7 C2(P5)≤15	K	K/C3≤3 C3(P5)≤13	K/C3	–	M
76.2mm (r)	K/C5	K/C2	K/C3	K/C3≤22 C3(P5)≤31	K/C5	K/C2	K/C3	K	K/C3	K/C3	–	M
76.2mm (r) APCR	K/C2	K/C2	K/C2	K/C2	K/C2	K/C1	K/C2	K	K/C2	K/C2	–	M
88mm flak	K/C5	K/C2	K/C3	K/C3	K/C5	K/C2	K/C3	K	K/C3	K/C3	–	M

TARGET VEHICLE
Valentine II

AREA IMPACTED:

DICE ROLL	2	3	4	5	6	7	8	9	10	11	12
Front	GM	LH	TR	TR	–	–	–	–	UH	TUR	R
Flank	TUR	LH	–	TR	UH	LH	–	LH	LH	–	–
Rear	–	H	TR	TR	–	–	–	–	H	TUR	–

WEAPON FIRING	FRONT				FLANK			REAR		R	G	TR
	UH	LH	TUR	GM	UH	LH	TUR	H	TUR			
7.92mm ATR	–	–	–	–	–	–	–	–	–	F/C1(P3) ≤3	–	M≤3
20mm Breda (I)	–	–	–	–	–	–	–	–	–	F/C1(P3) ≤6	–	M≤6
28/20mm PAK	K/C1≤2 C1(P4)≤4	C1(P3)≤3	–	–	K/C1≤4 C1(P4)≤7	K/C1≤4 (P5)≤7	F/C1(P3) ≤1	M(P3)≤3	F/C1(P3) ≤1	K/C1	–	M
47mm M37 I	–	–	–	–	C2(P4)≤3	C1(P5)≤3	–	–	–	K/C2	–	M
50mm short	–	–	–	–	C2(P4)≤5	C1(P5)≤5	–	–	–	K/C2≤17 F/C1(P4) ≤23	–	M≤23
50mm short (APCR)	K/C1≤2 C1(P4)≤3	K/C1≤4 C1(P3)≤7	K/C1≤4	K/C1≤4	K/C2≤6 C1(P4)≤8	K/C1≤6 (P5)≤8	K/C1≤4 F/C1(P3) ≤5	K≤3 M(P3)≤5	K/C1≤4 F/C1(P3) ≤5	K/C1≤13	–	M≤15
50mm long	C2(P4)≤3	C1(P4)≤2	–	–	K/C2≤5 C2(P4)≤8	K/C1≤5 C1(P5)≤8	–	M(P4)≤2	–	K/C2	–	M≤28
50mm long (APCR)	K/C1≤8 C1(P4)≤10	K/C1≤12 M(P4)≤16	K/C1≤10 F/C1(P3) ≤13	K/C1≤10 F(P3)≤13	K/C2≤16 C1(P4)≤19	K/C1≤16 (P5)≤19	K/C1≤12 F/C1(P3) ≤14	K≤10 M(P3)≤13	K/C1≤12 F/C1(P3) ≤14	K/C1≤26	–	M
75mm short	–	–	–	–	–	–	–	–	–	K/C2	–	M
75mm L/18 (I)	–	–	–	–	C2(P5)≤2	C1(P5)≤2	–	–	–	K/C2	–	M
76.2mm (r)	K/C2≤22 C1(P5)≤29	K/C2≤12 C1(P4)≤24	K/C2≤7 F/C2(P5) ≤10	K/C2≤7 F/C2(P5) ≤10	K/C3	K/C2	K/C2≤11 C2(P4)≤17	K≤17 M(P5)≤24	K/C2≤11 C2(P4)≤17	K/C2	–	M
76.2mm (r) (APCR)	K/C1≤18 C1(P4)≤21	K/C1≤27	K/C2≤21 F/C1(P4) ≤24	K/C1≤21 F/C1(P4) ≤24	K/C2	K/C1	K/C2≤23 F/C1(P4) ≤28	K≤22 M(P4)≤26	K/C2≤23 F/C1(P4) ≤28	K/C2	–	M
88mm FLAK	K/C3	K/C2	K/C2≤16 F/C2(P5) ≤24	K/C3≤16 F/C2(P5) ≤24	K/C4	K/C3	K/C2≤23 F/C2(P5) ≤29	K	K/C2≤23 F/C2(P5) ≤29	K/C2	–	M

AREA IMPACTED:

TARGET VEHICLE
U.S. M3 (Lt.) 'General Stuart' or 'Honey'.

DICE ROLL	2	3	4	5	6	7	8	9	10	11	12
Front	GM	TUR	LH	–	UH	–	–	TR	–	UH	R
Flank	–	TR	TR	LH	LH	UH	LH	TUR	–	–	R
Rear	TUR	–	–	TUR	H	–	H	TR	–	H	R

WEAPON FIRING	FRONT				FLANK			REAR		R	G	TR
	UH	LH	TUR	GM	UH	LH	TUR	H	TUR			
7.92mm ATR	–	–	–	–	C1(P3)≤3	(P4)≤3	–	M(P3)≤2	–	F/C1(P3)≤3	–	M≤5
20mm Breda (I)	–	–	C1(P2)≤1	F(P2)≤3	K/C1≤2 C1(P4)≤8	K≤2 (P5)≤8	C1(P3)≤3	K≤2 M(P4)≤9	C1(P3)≤3	F/C1(P3)≤7 F≤11	–	M≤11
28/20mm PAK	K/C1≤7 C1(P3)≤10	K/C1≤8 M(P4)≤11	K/C1≤8 C1(P3)≤11	K/C2≤8 F/C1(P3) ≤12	K/C2	K	K/C2	K	K/C2	K/C2	–	M
47mm M37 (I)	K/C2≤4 C2(P4)≤8	M(P3)≤1	K/C2≤4 F/C1(P4)≤8	K/C2≤7 F/C2(P4) ≤11	K/C2≤13 C2(P4)≤17	K/C1≤13 C1(P5)≤17	K/C2≤10 F/C1(P3) ≤15	K≤13 M(P5)≤17	K/C2≤10 F/C1(P3) ≤15	K/C2	–	M
50mm short	K/C2≤6 C2(P3)≤11	M(P3)≤1	K/C2≤6 F/C1(P3) ≤11	K/C2≤10 F/C2(P4) ≤14	K/C2≤17 C2(P4)≤23	K/C1≤17 C1(P5)≤23	K/C2≤13 F/C1(P3) ≤19	K≤17 M(P5)≤23	K/C2≤13 F/C1(P3) ≤19	K/C2	–	M
50mm short (APCR)	K/C1≤9 C1(P3)≤10	K/C1≤5 M(P4)≤8	K/C2≤9 F/C1(P4) ≤10	K/C2≤10 F/C1(P3) ≤13	K/C1≤11 C1(P3)≤14	K≤11 (P4)≤14	K/C1≤11 F/C1(P3) ≤13	K≤13 M(P4)≤16	K/C1≤11 F/C1(P3) ≤13	K/C1	–	M
50mm long	K/C2≤11 C2(P4)≤16	M(P4)≤6	K/C2≤11 F/C1(P4) ≤16	K/C2≤15 F/C2(P4) ≤19	K/C2≤18 C2(P4)≤24	K/C1≤18 C1(P5)≤24	K/C2≤18 F/C1(P3) ≤24	K≤21 M(P5)≤28	K/C2≤18 F/C1(P3) ≤24	K/C2	–	M
50mm long (APCR)	K/C1≤20 C1(P3)≤23	K/C1≤13 M(P4)≤18	K/C2≤20 F/C1(P3) ≤23	K/C2≤23 F/C1(P4) ≤26	K/C1≤22 C1(P3)≤28	K≤22 (P4)≤18	K/C1≤23 F/C1(P3) ≤28	K	K/C1≤23 F/C1(P3) ≤28	K/C1	–	M
75mm short	C2(P4)≤4	–	F/C2(P4)≤9	K/C2≤3 F/C2(P4) ≤15	K/C3	K/C2	K/C2≤12 F/C2(P4) ≤16	K	K/C2≤12 F/C2(P4) ≤16	K/C2	–	M
75mm L/78 (I)	K/C2≤3 C2(P4)≤13	–	K/C2≤7 F/C2(P4) ≤15	K/C2	K/C3	K/C2	K/C2	K	K/C2	K/C2	–	M
76.2mm(r)	K/C4	K/C2≤24 M(P5)≤31	K/C2	K/C2	K/C4	K/C2	K/C2	K	K/C2	K/C2	–	M
76.2mm(r) (APCR)	K/C2	K/C1≤24 M(P4)≤27	K/C2	K/C2	K/C2	K/C1	K/C2	K	K/C2	K/C2	–	M
88mm FLAK	K/C4	K/C2	K/C2	K/C2	K/C4	K/C2	K/C2	K	K/C2	K/C2	–	M

DIRECT HIT RESULTS FOR NON-AFV VEHICLES

target type	fragmentation and gunfire factors				ATR's	20mm	AP or HE above 20mm
	5-25	26-40	41-60	over 60			
Carrier	–	–	–	–	M(P1)	M(P1)	K
ACV	–	–	–	M	M(P1)	M(P1)	K
251/1	–	–	–	–	M(P1)	M(P1)	K
250/1	–	–	–	–	M(P1)	M(P1)	K
staff car	M	M(P1)	M(P3)	K	M(P2)	M(P4)	K
light truck	–	M	M(P2)	M(P4)	M(P1)	M(P3)	K
medium truck	–	M	M(P1)	M(P2)	M(P1)	M(P2)	K
Quad	–	M	M(P1)	M(P2)	M(P1)	M(P2)	K
Sd.kfz.7	–	–	M	M(P1)	M(P1)	M(P2)	K

AFV BAIL-OUT CHART

X = crew bails out

No. of casualties	die roll					
	1	2	3	4	5	6
C1	X	X	–	–	–	–
C2	X	X	X	X	–	–
C3 or more	X	X	X	X	X	X

DIRECT HITS ON WEAPONS ≤ 40mm (scenario 8 and above)

dice	2	3	4	5	6	7	8	9	10	11	12
AP hit	X	–	X	–	–	–	–	–	–	–	–
HE hit	X	–	X	–	–	X	–	–	X	–	–

X= weapon destroyed.

DAMAGE TABLES

TARGET VEHICLE
Marder III

AREA IMPACTED:

DICE ROLL	2	3	4	5	6	7	8	9	10	11	12
Front	–	G	UH	–	TUR	–	TR	–	–	LH	R
Flank	–	LH	LH	UH	G	LH	TR	UH	TUR	LH	–
Rear	TUR	G	H	H	–	TUR	TR	H	–	–	R

WEAPON FIRING	FRONT				FLANK			REAR		R	G	TR
	UH	LH	TUR	GM	UH	LH	TUR	H	TUR			
Boys ATR	–	–	F/C1≤5	–	C1(P4)≤4 C1(P3)≤6	(P4)≤6	F/C1(P1)≤9	M(P4)≤6	F/C1	F≤4	F≤4	M≤6
2 pdr.	–	–	F/C1	–	K/C1	K	F/C1(P1)	K	F/C1(P1)	F/C1(P2)	F	M
37mm M6	–	–	F/C1	–	K/C1	K	F/C2(P1)	K	F/C1(P1)	F/C1(P2)	F	M
40mm Bofors	K/C1≤2 C1(P4)≤8	K/C1≤3 M(P4)≤9	F/C1	–	K/C1	K/C1	F/C2(P1)	K	F/C1(P1)	F/C1(P2)	F	M
6 pdr.	K/C2≤13 C2(P3)≤17	K/C1≤13 M(P4)≤17	F/C1	–	K/C1	K/C1	F/C2(P1)	K	F/C2(P2)	F/C1(P3)	F	M
75mm(f) 75mm M2	C2(P3)≤7	M(P5)≤8	F/C2	–	K/C2	K/C1	F/C2(P2)	K	F/C2(P2)	F/C1(P3)	F	M
25 pdr.	K/C2≤2 C2(P3)≤8	K/C2≤2 M(P5)≤9	F/C2	–	K/C2	K/C1	F/C2(P2)	K	F/C2(P2)	F/C2(P3)	F	M

TARGET VEHICLE
Italian M 13/40

AREA IMPACTED:

DICE ROLL	2	3	4	5	6	7	8	9	10	11	12
Front	TUR	–	LH	LH	TR	UH	–	–	UH	GM	R
Flank	–	–	TUR	LH	TR	UH	UH	LH	LH	–	R
Rear	TUR	–	TUR	H	TR	H	H	–	H	H	R

WEAPON FIRING	FRONT				FLANK			REAR		R	G	TR
	UH	LH	TUR	GM	UH	LH	TUR	H	TUR			
Boys ATR	–	–	–	–	–	(P2)≤1	–		–	F≤6	–	M≤4
2 pdr.	K/C2≤10 C2(P4)≤16	M/C1(P5) ≤3 M(P4)≤9	F/C1(P3) ≤6	–	K/C2≤14 C2(P4)≤19	K/C1≤14 M/C1(P4) ≤19	K/C1≤10 F/C1(P3) ≤17	K≤15 M(P4)≤19	K/C2≤10 F/C2 (P3) ≤17	K/C2≤16 F/C2(P4) ≤19	–	M
37mm M6	K/C2≤15 C2(P4)≤22	M/C1(P5) ≤4 M(P4)≤13	F/C1(P3) ≤7	–	K/C2≤20 C2(P4)≤25	K/C1≤20 M/C1(P5) ≤25	K/C1≤15 F/C1(P3) ≤22	K≤20 M(P4)≤25	K/C2≤15 F/C2(P3) ≤22	K/C2≤22 F/C2(P4) ≤27	–	M
40mm Bofors	K/C2	M/C1(P5) ≤13 M(P4)≤16	K/C2≤9 F/C2(P4) ≤15	C1(P3)≤2	K/C2	K/C1	K/C1	K	K/C2	K/C2	–	M
6 pdr.	K/C3	K/C1≤16 M(P5)≤27	K/C2≤18 F/C2(P4) ≤23	K/C2≤8 F/C2(P4) ≤12	K/C2	K/C1	K/C2	K	K/C2	K/C2	–	M
75mm(f) 75mm M2	K/C3	K/C2≤7 M(P5)≤17	K/C2≤12 F/C2(P5) ≤17	–	K/C3	K/C2	K/C2	K	K/C2	K/C2	–	M
25 pdr.	K/C3	K/C2≤7 M(P5)≤14	K/C2≤11 F/C2(P5) ≤14	–	K/C3	K/C2	K/C2	K	K/C2	K/C2	–	M

TARGET VEHICLE
Italian 'Semovente'
S.P. Howitzer

AREA IMPACTED:

Dice Roll	2	3	4	5	6	7	8	9	10	11	12
Front	GM	–	–	LH	LH	TR	UH	UH	UH	–	G
Flank	–	–	LH	LH	LH	UH	TR	UH	UH	LH	LH
Rear	–	–	H	H	H	H	TR	H	H	–	–

WEAPON FIRING	FRONT				FLANK			REAR		R	G	TR
	UH	LH	TUR	GM	UH	LH	TUR	H	TUR			
Boys ATR	–	–	–	–	–	(P2)≤1	–	–	–	–	F≤4	M≤4
2 pdr.	K/C2≤15 C2(P4)≤19	M/C1(P5)≤3 M(P4)≤9	–	–	K/C2≤14 C2(P4)≤19	K/C1≤14 C1(P4)≤19	–	K≤15 M(P4)≤19	–	–	F	M
37mm M6	K/C2≤21 C2(P4)≤26	M/C1(P5)≤4 M(P4)≤13	–	–	K/C2≤20 C2(P4)≤25	K/C1≤20 C1(P4)≤25	–	K≤20 M(P4)≤25	–	–	F	M
40mm Bofors	K/C2	K/C1≤16 M(P4)≤27	–	F/C1(P3)≤2	K/C2	K/C1	–	K	–	–	F	M
6 pdr.	K/C3	K/C1≤16 M(P4)≤27	–	K/C2≤8 F/C1(P3)≤12	K/C2	K/C1	–	K	–	–	F	M
75mm(f) 75mm M2	K/C3	K/C2≤7 M(P5)≤17	–	–	K/C3	K/C2	–	K	–	–	F	M
25 pdr.	K/C3	K/C2≤7 M(P5)≤14	–	F/C1(P3)≤2	K/C3	K/C2	–	K	–	–	F	M

AREA IMPACTED:

TARGET VEHICLE
Panzer IV E

DICE ROLL	2	3	4	5	6	7	8	9	10	11	12
Front	G	GM	TUR	TR	LH	–	–	–	TR	UH	R
Flank	G	–	TR	–	LH	LH	UH	UH	TUR	–	R
Rear	–	TUR	TUR	TR	H	–	H	H	TR	–	R

WEAPON FIRING	FRONT				FLANK			REAR				
	UH	LH	TUR	GM	UH	LH	TUR	H	TUR	R	G	TR
Boys ATR	–	–	–	–	–	–	–	M(P3)≤1	–	F(P2)≤4	F≤2	M≤2
2 pdr.	–	–	K/C2≤7 F/C2(P3) ≤12	K/C2≤2 F/C2(P3) ≤8	K/C3≤5 C2(P4)≤11	K/C2≤5 C1(P4)≤11	K/C2≤15 F/C2(P3) ≤19	K	K/C2≤15 F/C2(P3) ≤19	K/C2≤16 F/C2(P3) ≤19	F	M
37mm M6	–	–	K/C2≤20 F/C2(P3) ≤25	K/C2≤13 F/C2(P3) ≤21	K/C3≤6 C2(P4)≤16	K/C2≤6 C1(P4)≤16	K/C2≤20 F/C2(P3) ≤25	K	K/C2≤20 F/C2(P3) ≤25	K/C2≤22 F/C2(P3) ≤27	F	M
40mm Bofors	C1(P3)≤1	M(P4)≤3	K/C2	K/C2≤13 F/C2(P3) ≤16	K/C3≤14 C2(P4)≤16	K/C2≤14 C1(P4)≤16	K/C2	K	K/C2	K/C2	F	M
6 pdr.	K/C2≤9 C1(P4)≤13	K/C1≤9 M(P5)≤17	K/C2≤24 F/C2(P4) ≤27	K/C3≤21 F/C2(P4) ≤27	K/C3≤22 C2(P5)≤27	K/C2≤22 C1(P5)≤27	K/C3	K	K/C3	K/C3	F	M
75mm(f) 75mm M2	K/C2≤5 C2(P5)≤13	M(P5)	K/C3	K/C3	K/C3	K/C2	K/C3	K	K/C3	K/C3	F	M
25 pdr.	K/C2≤6 C2(P5)≤12	K/C3≤2 M(P5)≤14	K/C3	K/C3	K/C3	K/C2	K/C3	K	K/C3	K/C3	F	M

DIRECT HIT RESULTS FOR NON-AFV VEHICLES

target type	fragmentation and gunfire factors				ATR's	20mm	AP or HE above 20mm
	5-25	26-40	41-60	over 60			
Carrier	–	–	–	–	M(P1)	M(P1)	K
ACV	–	–	–	M	M(P1)	M(P1)	K
251/1	–	–	–	–	M(P1)	M(P1)	K
250/1	–	–	–	–	M(P1)	M(P1)	K
staff car	M	M(P1)	M(P3)	K	M(P2)	M(P4)	K
light truck	–	M	M(P2)	M(P4)	M(P1)	M(P3)	K
medium truck	–	M	M(P1)	M(P2)	M(P1)	M(P2)	K
Quad	–	M	M(P1)	M(P2)	M(P1)	M(P2)	K
Sd.kfz.7	–	–	M	M(P1)	M(P1)	M(P2)	K

AFV BAIL-OUT CHART

X = crew bails out

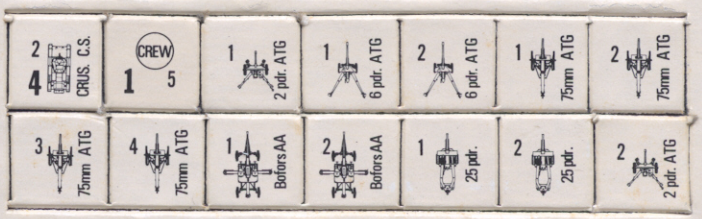
No. of casualties	die roll					
	1	2	3	4	5	6
C1	X	X	–	–	–	–
C2	X	X	X	X	–	–
C3 or more	X	X	X	X	X	X

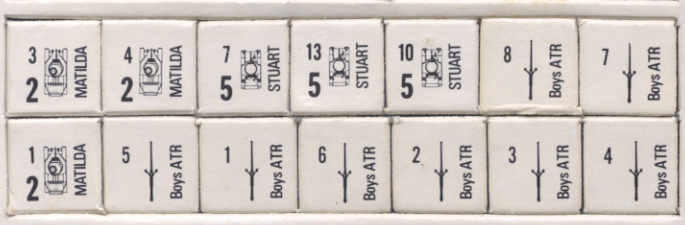
DIRECT HITS ON WEAPONS ≤ 40mm (scenario 8 and above)

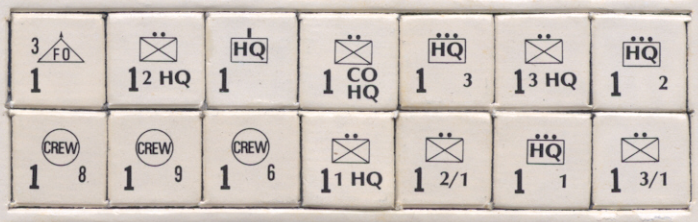
dice	2	3	4	5	6	7	8	9	10	11	12
AP hit	X	–	X	–	–	–	–	–	–	–	–
HE hit	X	–	X	–	–	X	–	–	X	–	–

X= weapon destroyed.

ALLIED UNIT COUNTERS



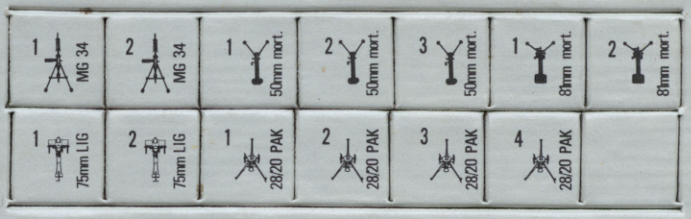




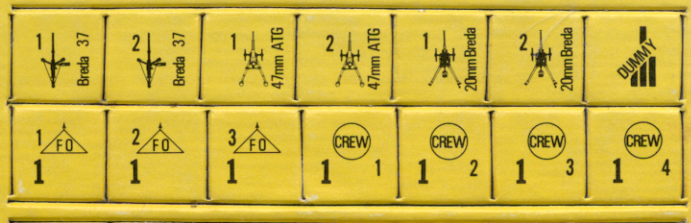
ENTRENCHMENT COUNTERS

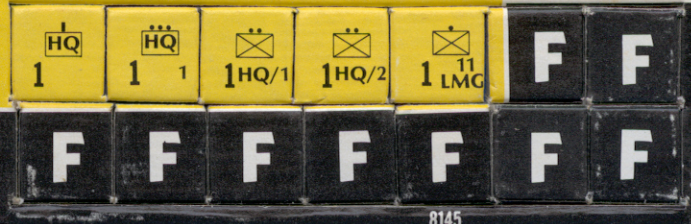
AXIS UNIT COUNTERS

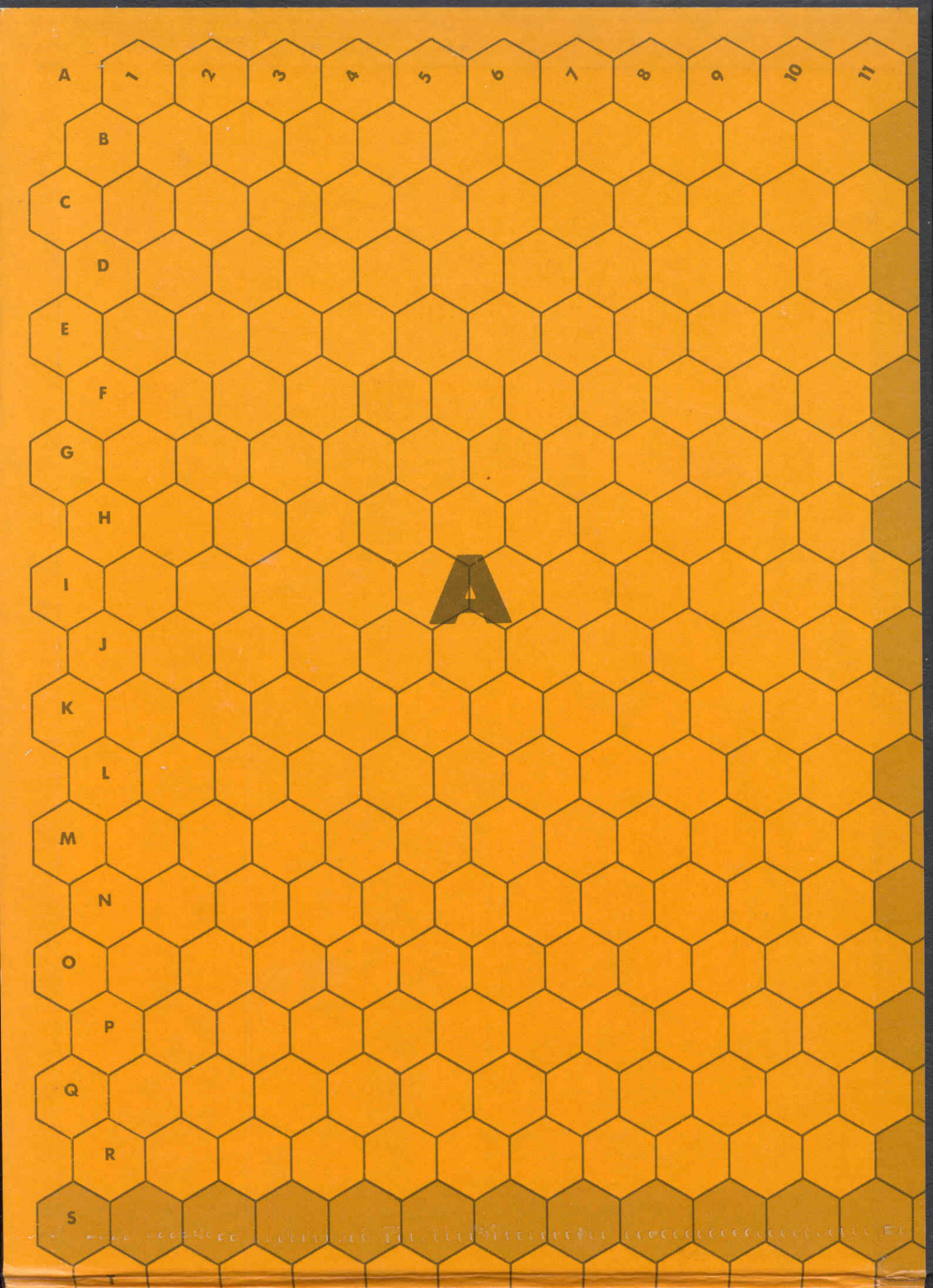
GERMAN

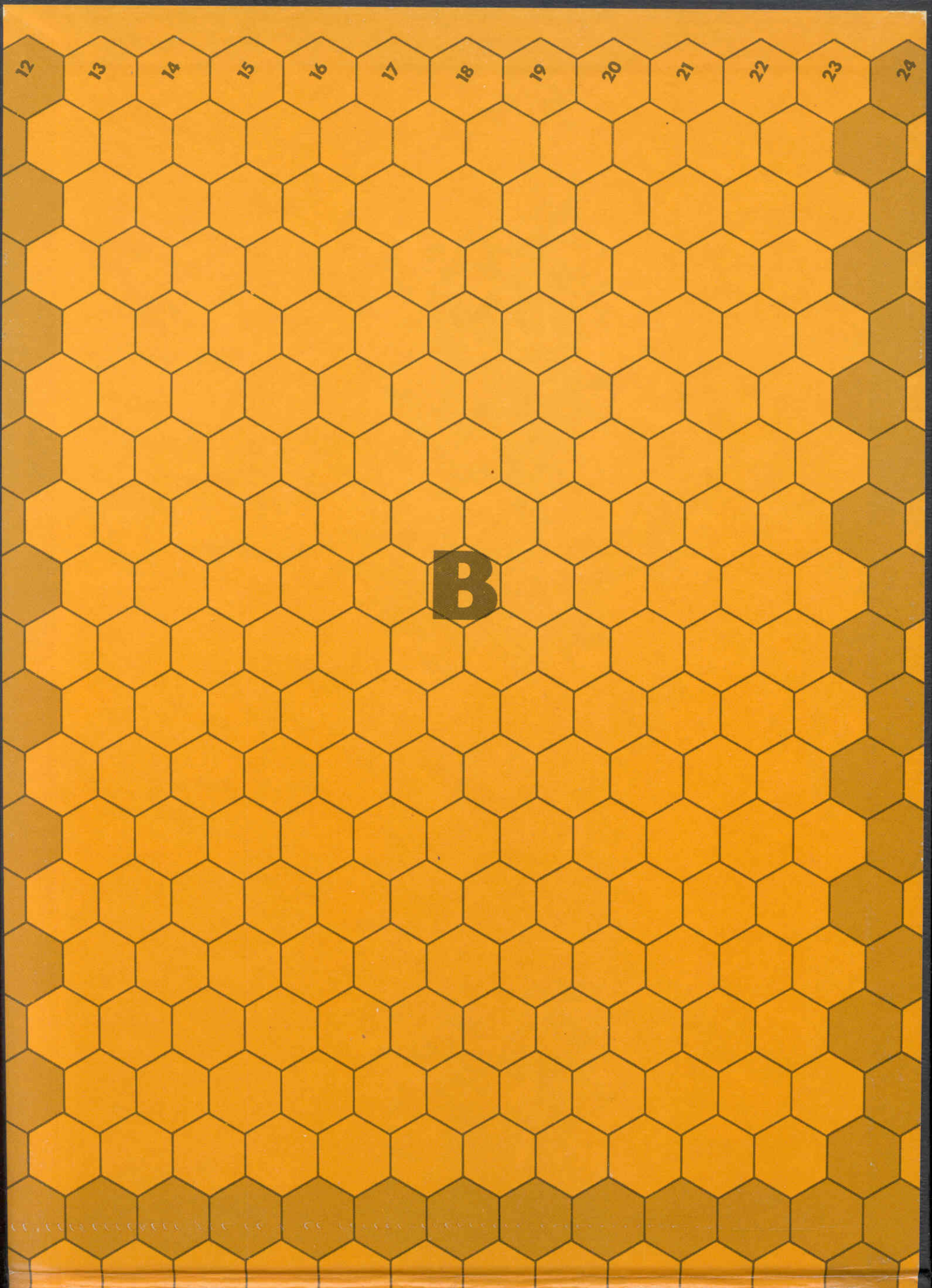


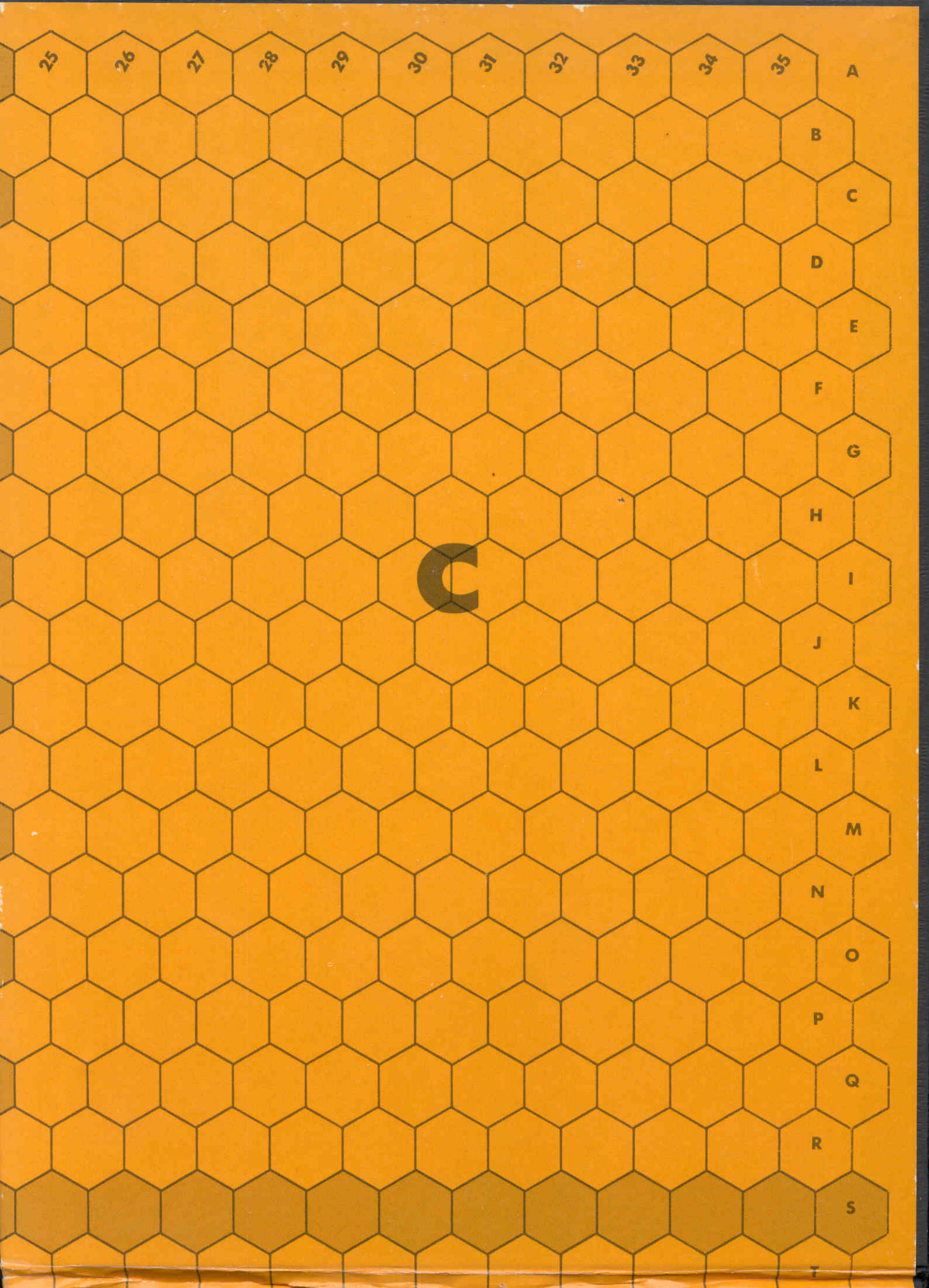
ITALIAN

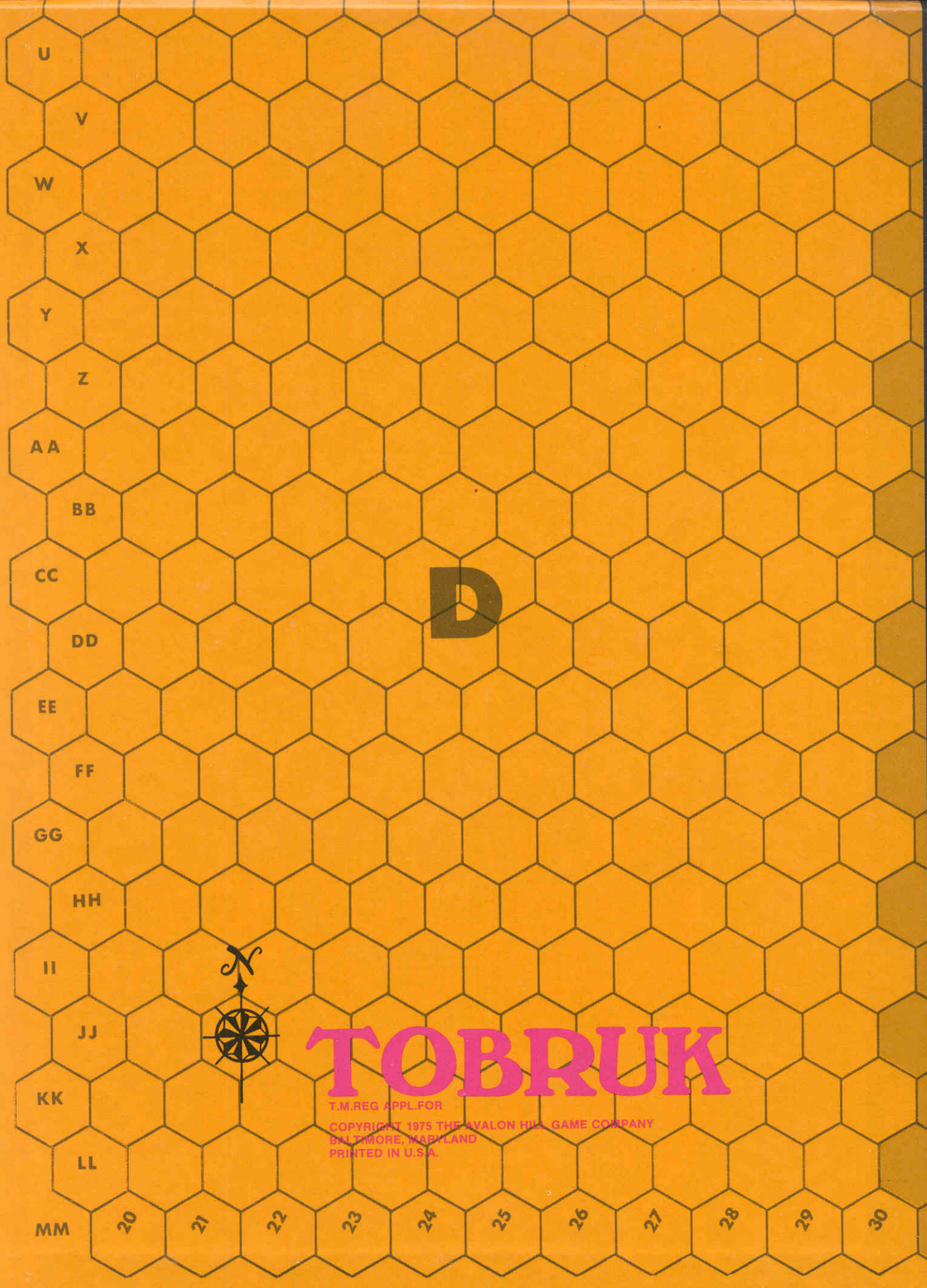





A
1
2
3
4
5
6
7
8
9
10
11
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S

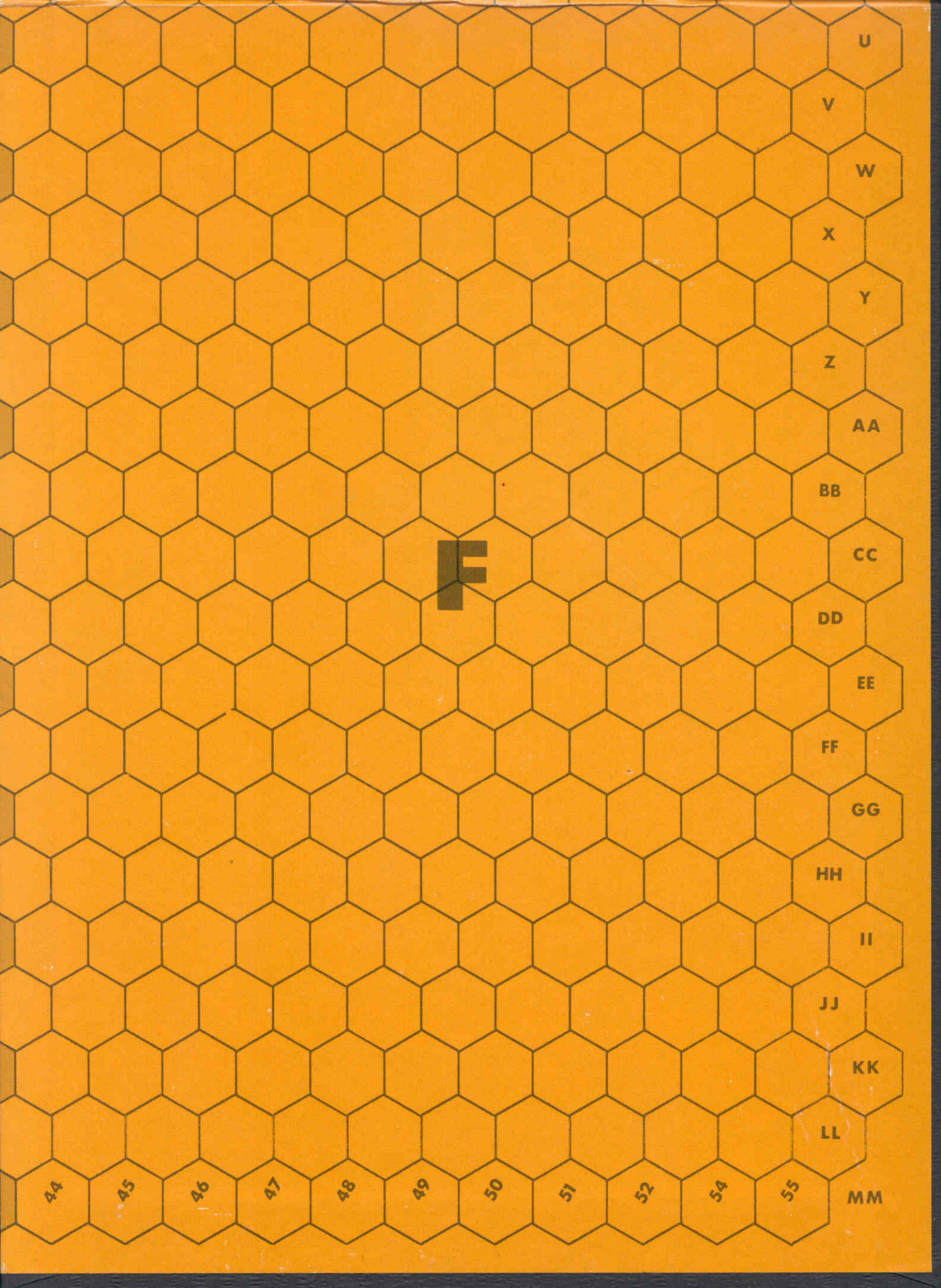

12
13
14
15
16
17
18
19
20
21
22
23
24
B


25
26
27
28
29
30
31
32
33
34
35
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T


U
V
W
X
Y
Z
AA
BB
CC
DD
EE
FF
GG
HH
II
JJ
KK
LL
MM
20
21
22
23
24
25
26
27
28
29
30
D
N
TOBRUK
T.M.REG APPL.FOR
COPYRIGHT 1975 THE AVALON HILL GAME COMPANY
BALTIMORE, MARYLAND
PRINTED IN U.S.A.

E

31 32 33 34 35 36 37 38 39 40 41 42 43


F
U
V
W
X
Y
Z
AA
BB
CC
DD
EE
FF
GG
HH
II
JJ
KK
LL
MM
44
45
46
47
48
49
50
51
52
54
55

The sun blazed down with white hot intensity, turning the horizon into a shimmering, dancing ribbon. In the distance, the mechanical roar of German panzers could be heard like a thunderstorm about to break. The Afrika Korps was on the move!

Exhausted British infantry, part of the famed Desert Rats, crouched low in their slit trenches, patiently waiting. Weary, dirty, and sleepless, they braced themselves to repel yet another of Rommel's ferocious assaults. Could this ragged, thin line of Australian, South African, Free French, and British infantry continue to hold against the Desert Fox's veteran troops?

There could be no retreat. There could be no hope of relief. The British faced the Germans in the desert with their backs to the sea. This was the battle for North Africa, the conquest of a continent. This was the most famous siege in the annals of modern warfare. This was the battle for

TOBRUK

Now, you can re-create all of the furious action of tank-to-tank battles on the Western Desert during World War Two.

NINETEEN DIFFERENT GAME SITUATIONS are provided to enable you to re-create all facets of the decisive Gazala battle Rommel's most spectacular victory that led directly to his most spectacular defeat at El Alamein only a few months later. Now you can re-fight all the crucial actions of this important battle on a SQUAD and INDIVIDUAL WEAPON level: 'The Group Crewell Feint,' 'Action at Point 171,' 'The Destruction of the 150th Brigade,' 'Bir Hacheim: The Fall of Point 186,' 'Convoy Raid,' 'Night Assault,' 'Battery Overrun,' and more.

BEGIN PLAY ALMOST IMMEDIATELY! Now, through the innovative use of the Programmed Instruction method, even a novice wargamer can quickly get into the action. Each game situation has its own rules 'module.' To play the game it is only necessary to read the first short module. As skills increase, players advance to the more realistic modules at their own pace to encompass all of the subtle nuances of armored combat: tank-to-tank combat; squad-level infantry action; melee; armored overrun; armor penetration and damage; morale; gun duels; smoke; Stuka dive-bombers; forward observers; counter-battery fire; grenades; dummy guns; dust storms; Accidental Bombing; infantry close assault, and much, much, more.

TOBRUK takes you right into the action, giving you a turret-eye view of armored combat as it REALLY was. Every important German, British, Italian, and American weapon that fought in the Western Desert during the crucial 1942 campaign is at your command:

SOME OF THE UNITS YOU CAN COMMAND:

U.S. M3 Medium 'Grant': Key British tank in the 1942 battles. Very heavy armor and two powerful weapons on a fast and very reliable chassis.

Pzkw III-h Special: Most dangerous German tank in the desert in 1942. Only real match for the Grant. Long gun very accurate and lethal.

Carro Armato Tipo M13/40: Italian main battle tank knicknamed the 'self-propelled coffin.' Weak armor, good gun. Unreliable and highly combustible when penetrated by armor-piercing shell.

IN EACH GAME YOU GET:

* Over 500 unit counters representing the actual tanks, guns, vehicles and infantry units that fought in the North African campaign.
* Big 22" x 24" hard-mounted playing board.
* Comprehensive rules of play using the innovative Programmed Instruction method which allows players to begin play almost immediately.
* Nineteen different, complete game situations that permit players to play either a short 'fire-fight' or a full blown major assault.