

KNIGHTS OF THE DESERT

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I. INTRODUCTION

Knights of the Desert is an operational level simulation of Rommel's campaigns in North Africa in 1942. Taking command of the Afrika Korps, you will match yourself against the Allies commanded by the computer or a human opponent.

Loading the Program

The procedure to load the game varies with each computer and version.

Atari Disk Version

This program requires the Atari BASIC cartridge. Turn on the disk drive, insert the disk with the label face up when the drive stops, and turn on the computer. The disk will automatically boot up.

Atari Cassette Version

This program version also requires the Atari BASIC cartridge. Insert the Atari side of the cassette, as per the label, into the recorder and rewind it. Turn on the computer, press the recorder play button, type CLOAD, and press RETURN twice. When READY appears type RUN. Keep the play button depressed until the game is in progress and the game map is on the screen. This loading process will take several minutes.

Apple Disk Version

Boot your game disk and the game will begin automatically. If you are using an Apple II with Pascal, you must first use your BASICS disk. If you are using an Apple III, you must first go into Apple II emulation. If you have an Apple IIe, be sure to lock your CAPS LOCK key.

TRS-80 Cassette Version

Insert the TRS-80 side of the cassette, rewind it, and press the PLAY button. Type CLOAD and when READY appears type RUN. Keep the PLAY button depressed until the game is actually in process.

(you are in the Logistics Phase). After you answer the questions in the opening program another program will be loaded in. When READY appears type RUN. Press RETURN.

Saving a Game in Progress

Atari and Apple Disk Versions

At the end of a turn you will be asked if you wish to save the game (you are given the option to continue the game after saving a turn). If you answer yes instructions will appear on the screen to allow you to do so. Please note that both versions will require you to insert a "saved game diskette" (normal Apple initialized diskettes will not work).

Atari and TRS-80 Cassette Versions

The program will ask if you desire to save the game. Before you answer yes insert a blank cassette and press the recorder RECORD and PLAY buttons. The Atari version also requires you to press RETURN.

In order to recall a saved game, begin loading as usual and select old game (or say NO to the menu option "NEW GAME"). Once this is done, follow the prompts given by the computer.

NOTE: If you wish to keep the ratings you set at the beginning of your game, do not change any of the ratings when you recall the game.

II. SETTING UP THE GAME

Before actually playing the game you will need to set several parameters such as opponent type, scenario, difficulty level, etc. Although the parameters are basically the same for all computer versions the manner in which you input them into the computer differs.

APPLE Version

The selected options are inversed on the screen. If you are in agreement press the space bar to continue. If not press the number which corresponds to the option you wish to change and the inverse will switch to the alternative.

Atari Versions

Insert your joystick into port #1. The selected options are inversed on the screen. If you are in agreement toggle the joystick to the last option (CONTINUE) and press the FIRE button. If not, toggle the joystick to the numbered option you wish to change and press the FIRE button. The selected inversed option will change.

TRS-80 Version

Press the number key or Y or N key to select the desired option on the screen.

Most of the parameters and options are self-explanatory, however there are some which deserve further clarification as listed below:

Scenarios: Depending on which computer system you are using, there are a maximum of five scenarios available as listed below:

Tobruk '41	3/1941	(1 turn)
Tobruk '42	1/1942 to 6/1942	(3 turns)
El Alamein	7/1942 to 1/1943	(4 turns)
Campaign '41	3/1942 to 12/1942	(5 turns)
Campaign '42	3/1941 to 1/1943	(7 turns)
Campaign	3/1941 to 1/1943	(12 turns)

Tobruk '41, Camp '41, and Campaign all start on 3/1941. Unit availability and strengths are located on the Order of Battle. The chart below gives you a breakdown of what is generally available for each scenario at the start.

# of	# of	# of	# of
non-mobile	mobile	mobile	non-mobile
Scenarios	units	strength pts.	units
strength pts.	Ax/A1	Ax/A1	Ax/A1
Tobruk '41, Camp '41 1305/1660 and Campaign	4/1	1680/280	6/4
Tobruk '42, Camp '42 845/1925	8/5	1580/2134	5/8
El Alamein 1069/924	10/9	2818/3824	6/7

Ratings: There are several aspects of the game which you are allowed to change. For each rating a number from 0 to 9 must be set. This will alter that aspect of the game by a certain percent as listed below: For the aspects of Combat Points, Replacement Points and German Supply Points:

Rating	% of Historical (Difficulty Level)
0	70% (expert)
1	80% (expert)
2	90% (expert)
3	100% (Historical)
4	110% (Intermediate)
5	120% (Intermediate)
6	130% (novice)

7	140% (novice)
8	150% (novice)
9	160% (novice)

For the aspect of Air Points:

Rating:	% of Historical (Difficulty Level)
0	40% (expert)
1	60% (expert)
2	80% (expert)
3	100% (historical)
4	110% (intermediate)
5	120% (intermediate)
6	130% (novice)
7	140% (novice)
8	150% (novice)
9	160% (novice)

For the aspect of Reinforcements

Rating:	Effect
1	arrive up to 4 turns early
2	arrive up to 3 turns early
3	arrive up to 2 turns early
4	arrive up to 1 turn early
5	arrive historically
6	arrive up to 1 turn late
7	arrive up to 2 turns late
8	arrive up to 3 turns late
9	arrive up to 4 turns late

Levels of Difficulty: There are four levels of difficulty: Expert, Historical, Intermediate, and Novice. Expert is the highest level of difficulty. The lower the level of difficulty given the greater the advantages received by that side (i.e. If an extremely good German player was to play a very inexperienced British player the German would choose Expert and the British Novice). Setting the level of difficulty will automatically set each rating to that level. Reinforcements are given an exception in that the rating is always set to 5 (Historical) for all levels.

Random Initiative: If you answer no then the initiative is historical as shown on the Turn Chart. If yes then there is a 50% chance that initiative will go one way or another.

Optional Axis Depot Units: If you answer yes then the Axis will be given two additional depot units.

III. SEQUENCE OF PLAY (Also, quick start rules for experienced computer wargamers)

This section is designed so that an experienced wargamer can read it and get into the game immediately. The less experienced player will find it a useful outline. The game consists of twelve turns (less if a scenario is selected). Each game turn consists of the following segments and phases.

1. Sequence of Play Overview

A. Mobilization Segment

1. Reinforcement Phase
2. Supply Phase
3. Logistics Phase
4. Initiative Phase

B. First Player Segment

1. Operational Phase - First player: Both player's units receive a full allotment of operation points (axis mobile-36, nonmobile-18/ Allied mobile-28, nonmobile-18). Second Player may be eligible for limited reaction during this phase.
2. Resupply Phase
3. Depot Movement Phase - First Player
4. Enemy Reaction Phase - Second Player: First Player may be eligible for limited reaction during this phase.
5. Operations Phase - First Player: First Player's units (only) receive a full allotment of operation points. Second Player may be eligible for limited reaction during this phase.
6. Resupply Phase
7. Depot Movement Phase - First Player

C. Second Player Segment

1. Operations Phase - Second player: First Player may be eligible for limited reaction during this phase.
2. Resupply Phase
3. Depot Movement Phase - Second Player
4. Enemy Reaction Phase - First Player: Second Player may be eligible for limited reaction during this phase.
5. Operations Phase - Second Player: Second Player(only) receives a full allotment of

operations points for each unit. First Player may be eligible for limited reaction.

6. Resupply Phase
7. Depot Movement Phase - Second Player.

D. Finalization Segment

1. Victory Determination Phase
2. Save Game Phase

2. Phase Description

A. Reinforcement Phase

1. All eligible reinforcements arrive at each player's home base.
2. A maximum of six units can stack in the home base. A permanent garrison unit is present which counts as one towards the stacking limit.
3. If the stacking limit would be exceeded because of arriving units then the excess units are delayed until a turn when room is available.
4. Eliminated units may return as cadres which arrive in the same manner as reinforcements the turn following their elimination.
5. cadres arrive only after all eligible reinforcements have arrived.

1. At this point in time all units of both sides have their supply status checked. A unit is either supplied or unsupplied. Unsupplied units may not receive additional supply or replacements and if they lack supply points for maintenance they are eliminated.
2. axis combat units must be within two hexes and Allied combat units three hexes (computer-Allied, 4 hexes) of a supply source to be supplied. Depot units must be within six hexes.
3. Home bases, Tobruk (if friendly), and other friendly depot units may serve as supply sources.
4. If depot units are used as a supply source then there must be a line of depots no more than six hexes apart from each other back to the home base or Tobruk (if friendly).
5. Supply status is determined only by the range of a unit to a supply source. this range may be traced through enemy units or any terrain, including Impassable and ocean hexes.

C. Logistics Phase

1. Each player will cycle through their units (including arriving reinforcement and cadres).
2. A player may cycle through his units indefinitely by pressing the F key after each unit is displayed and flashed on the map. This gives a player the opportunity to see where his forces are and their current status. Depot units are the exception to this

in that you must press the R key and allocate replacements to them when they first appear.

3. Pressing the R key for ready will require the player to input replacements, supply, and resupply priority into the unit.

4. for each category the player will input a number from zero to nine. For replacements and

supply this will result in the unit receiving from 0% to 100% of the maximum amount allowed

as shown on the display. For resupply priority the number inputed will indicate the percent

(0% to 100%) of supply points to be received by that unit of the total eligible during

the resupply phases of the current turn. The amount of supply that the unit actually

receives is decreased by 1% per hex away from its home base.

5. Allied units are automatically given full supply and a resupply priority of nine. As a

result the Allied player only inputs replacements into his units (Allied units may not

be given replacements in March 1941). Axis supply is limited to what is remaining in the

overall supply pool. Points remaining in this overall supply pool are located on the

display (which can be accessed during play of the game).

6. during the logistics Phase, Tobruk if held by the allied is checked to see if it is

surrounded by Axis units or ocean hexes. If it is not then the Axis overall supply is

cut by 20%. Axis units must be east of Tobruk to trigger this. In addition any Axis depot

units alone in a hex within four hexes of Tobruk will be eliminated. The message "DESERT

RATS STRIKE", will appear when the above conditions are met.

D. Initiative Phase

1. The player with the initiative is asked if he wishes to move first. If he does he then

becomes the First Player.

2. Refer to the enclosed charts which indicate which side has the initiative for each turn.

If you are using the random initiative option the chances will be even each turn as to who

will have it.

E. Operations Phase

1. during this phase the player may move/attack/fortify, expending operations points and

supply points of the individual units as he does so. At the beginning of the first

operations phase of each game turn each side receives a full allotment of operations

points. At the beginning of each player's second operations phase of his player segment

that player's units receive a full allotment of operations points.

2. Refer to the charts enclosed which detail supply and operation point costs.

3. Depot units may not be moved during this phase. Garrison units may never be moved.

4. To move the cursor on the map press 1 to 6 to go in the direction as indicated by the

compass on the display. Pressing T will place the cursor on Tobruk and Pressing B will

place it over the player's homebase. APPLE owners have additional features they can access

on the screen with their required input to activate them. To move a unit or examine the

contents of a friendly hex place the cursor over the hex and press G.

5. Atari owners also press the 0 key to center the unit during cursor mode and while the

unit is moving. During these two phases or modes, Atari owners may scroll freely around

the map by first pressing the START key. Pressing the START key again returns you to the

current phase or mode.

6. When G is pressed the units in the hex will be displayed and be numbered one to six

followed by their unit number (refer to Order of Battle), combat strength, remaining

supply points, and operation points.

7. To access a desired unit press the number (1-6) that corresponds to it. Press F to return

to the cursor mode. The unit's statistics will now appear on the screen displaying its

name, combat strength, mobile or nonmobile status, supplied or unsupplied status, morale,

fortification level, remaining supply points, terrain of current hex, and remaining

operation points. Units alone in a hex will automatically be accessed when G is pressed.

8. To move the unit press 1-6 to indicate the desired direction. To fortify press B to build

one level of fortification per input. Pressing the F key will finish the unit for now and

return the cursor. APPLE owners may remove all units on the screen by pressing R and then

may return the units by pressing any other key. APPLE and ATARI owners may press 0 to

center the moving unit on the screen.

9. Allied units in Tobruk or Alexandria may use sea movement by pressing S, providing a unit

hasn't already used sea movement for that turn and no replacements were taken into units

occupying Tobruk during the logistics phase.

10. Units moving into a position which does not contain a friendly unit and which is next to

an enemy unit may trigger limited reaction for the enemy player (There is a 70% chance that this will occur). Limited reaction may also be triggered after each battle during the operations phase. There is a 25% chance of this occurring.

- a. The enemy player during limited reaction may choose units to be moved using the cursor the same as in any operations phase. Units are allowed up to 1/2 of their operation points allowance or remaining operation points, whichever is less, at any one time they are accessed to be moved.
- b. After a unit is F keyed the enemy player must pass an initiative check before he is allowed to move another unit. There is a 50% chance that he will pass the check.
- c. If a unit moves into a position adjacent to the enemy and that position is unoccupied by a friendly unit, then the limited reaction is ended and play passes back to the phasing player's operations phase.
- d. The enemy player may initiate combat during limited reaction only once, after which play passes back to the phasing player. Sea movement is not allowed.
- e. To exit the limited reaction phase voluntarily, press the shift and the # key.

11. The operations phase will continue until the player presses the shift and the # key.
Atari owners choose the option on a menu.

12. Units attempting to move into a position containing enemy units trigger the combat sequence.

- a. The combat sequence begins by allowing the attacking player to look at each defending unit in the hex and deciding if he wishes to include that unit in the battle by inputting Y or N.
- b. A player may cycle through the defending units as many times as he desires until he presses F.
- c. The attacking player will then cycle through his units in the hex which initiated combat, selecting those to be included in the attack. He will continue to cycle through his units until he presses F.
- d. The attacking player will now select a battle intensity(1-9), a level of risk(1-9), and the number of air points allocated to the battle.
- e. The defender chooses a level of risk and the number of allocated air points.
- f. Losses are subtracted from units involved in the battle. Supply costs are subtracted and captured supply added to the gaining units (from an eliminated enemy unit).

Operation point cost for the battle by the units is also deducted.

g. The results of the battle are displayed showing the intensity, risks, battle odds,

casualties (those caused by risk are put into parentheses), and air combat results

(See combat results explanation chart).

h. Several factors govern the battle odds of a combat and also modify the amount of

losses. Refer to the combat section in the main text for details.

13. During all phases in which units are allowed to move there is a stacking limit which

must be observed at all times. A position may contain up to six units. The position

containing Tobruk may only have four units in it.

F. Resupply Phase

1. Units of both sides are judged to be in supplied status or unsupplied status according

to the criteria listed in the Supply Phase.

2. Supplied units receive supply according to the resupply priority which was for units

in the Logistics Phase.

3. Allied units have an automatic resupply priority of nine which will give each supplied

unit 100% of the supply points it is eligible to receive. Axis units have this priority

set by the player in the Logistics Phase from 0 to 9 (0% to 100%). Points actually

received are decreased by 1% per hex away from the home base.

4. The supply points eligible to a unit during a resupply phase are determined by

subtracting the unit's current supply from the unit's supply ceiling. This value is

further modified by .25 during the Resupply Phases within the enemy's player segment.

5. Depot units are not resupplied during the Resupply phase.

G. Depot Movement Phase

1. Only the phasing player's depot units are allowed to move. D to move during any other phase including limited reaction.

2. Depot units are moved using the cursor and movement keys the same as any other unit.

3. Depot units do not trigger limited reaction nor do they initiate combat.

4. Depot units may participate in combat as attacking units only during the operations

phases. Depot units may only be chosen as defending units when only depot units

remain in the position.

5. You exit this phase by pressing the shift and # keys as in any other phase. Atari

owners use the joystick to select the end phase option.

H. Enemy Reaction Phase

1. The non-phasing player is allowed what is essentially an operations phase sandwiched

in between the operations phases of the phasing player.

2. In this phase the non-phasing player may move and have combat the same as any operations phase. Limited reaction on the part of the phasing player may also be triggered. Sea movement is allowed.
3. You may exit this phase the same as any other phase.

I. Victory Determination Phase

1. Players receive one victory point per three casualty points inflicted on the enemy.

These points are received immediately after combat.

2. At the end of the turn players receive points for whoever was the last side to occupy

the towns of Benghazi, Bardia, and Matruh. Each position is valued at 50 points. Tobruk

is valued at 100 points.

3. Each unit on the map receives points at the end of the turn as to its range from

its home base: 0-3 hexes = 0 VP, 4-12 hexes = 3 VP, 12-21 hexes = 6 VP, 22-29 hexes = 9 VP, 30-34 hexes = 12 VP.

4. Refer to the victory conditions chart for levels of victory based on points.

5. Loss of the home base results in immediate total defeat. The British home base

is Alexandria. The German home base is El Agheila.

IV. MAIN TEXT OF RULES

A. Units

1. Unit Description: There are twenty-eight Axis units and twenty-eight Allied units.

These units have varied characteristics and capabilities as covered below. The units

are represented on the map by various symbols which differs from computer to

computer. Please refer to the Orders of Battle for both sides as you read this section.

- a. Unit Name: Contains the historical designation of the unit with its size, type,

and nationality included.

- b. Combat Strength: Represents the unit's capability to inflict losses on the enemy

in terms of manpower and weapons.

- c. Combat Strength Ceiling: Is the maximum strength to which the unit is allowed

to build by way of replacements. It also sets the breaking point of a unit since

a unit is eliminated when its combat strength falls below 15% of the ceiling.

- d. Morale: Represents the cohesiveness of the unit in terms of training, esprit

de corps, leadership, and experience. A unit's morale never changes. Morale

modifies the number of casualties assigned to a unit by the combat results

according to the chart below:

Morale	Modifier to Losses
1	1.6
2	1.5
3	1.4
4	1.3
5	1.2
6	1.1
7	1.0
8	.9
9	.8

A unit with a morale of 9 would lose only 80% of the casualties originally assigned to it. A morale of 5 would result in 20% more casualties than originally assigned by the combat results.

e. Unit Type: Units are either mobile or non-mobile. This difference affects operation point allowances, operation point costs, and supply costs. Axis mobile units have an operation point allowance of 36 and Allied mobile units are given 28. Axis and Allied non-mobile units have an operation point allowance of 18. refer to the Terrain Effects Chart for details on operation and supply costs for each type.

f. Supply Portage: Each unit carries with it a certain amount of supply which is expended during movement, fortification, and combat. A unit whose supply falls below 50 points has its combat strength cut by one half for defense. In addition, a unit with less than 50 supply points before a combat will not come back as cadre if eliminated. Axis units must have a minimum of 100 supply points to be included in an attack. Allied units must have 200 supply points. Units receive additional supply points during the Logistics Phase, the resupply phases, and during combat after an enemy unit has been eliminated. See Charts for supply costs.

g. Supply Portage Ceiling: Mobile units have a ceiling of 600 supply points and non-mobile units have a ceiling of 500 points. This ceiling is the maximum amount of supply that the unit may carry.

h. Supply Status: Units are either supplied or unsupplied. Combat units are judged to be in supply if they are within range of a supply sources. Below are listed the ranges for combat units.

Unit	Range
Axis	2
Human Allied	3

Depot units are in supply if within six hexes of a supply source. A depot unit may be used as a supply source if it is within six hexes of Tobruk (if friendly) or its home base or a line of depot units no more than six hexes from each other back to

Tobruk (if friendly) or home base. Unsupplied units may not receive supply during the Logistics phase or the resupply phases.

i. Operation Points: Movement, fortification, and combat consume operation points of the unit. Refer to the charts for actual costs. Axis units must have a minimum of

4 operation points and Allied units 6 operation points to conduct an attack. Both

sides receive a full allotment of operation points the first operations phase

(regardless of which is the phasing player) of the game turn. Units will receive

another allotment the second operations phase of their player segment.

j. Fortification Level: This is the level to which the unit has fortified itself within

a specific position. A unit fortifies one level at a time by pressing B during any

operations phase or limited reaction. Atari owners choose the "fortification" option

on the menu. Fortification consumes operations points and supply points. Refer to

the charts for actual costs based on unit type and terrain type. Each level of

fortification increases the effective strength of the unit on defense by 20%.

Terrain and fortification defense modifiers may not exceed 3 times the units

original strength. Therefore each terrain type has a limit to which fortification

has an effective advantage to the defending unit.

Terrain	Maximum Fortification Level (effective)
Clear	9
Rough	5
Fortress	3
Town	5
Mountain	3
Coast	8

Fortification past these levels by units would be to no avail. Immediately upon moving

from a position the fortification level of the unit returns to 0. Units may still

attack from a position and retain their fortification level as long as they do not move.

k. Arrival Date: Units will appear on their home base during the Reinforcement Phase

of the turn. If stacking would be exceeded then the units will wait until a turn

when there is room. Reinforcements appear before returning cadres.

2. Unit Elimination and Cadres: When units are eliminated they may be eliminated from the

game or come back as cadres at the player's home base in the Reinforcement Phase.

If a unit is eliminated from the game the message "***ELIMINATED***" will appear. If the

unit will return as a cadre the message "ELIMINATED-CADRE FORMED" will appear.

a. A unit is eliminated when its combat strength falls below 15% of its combat strength

ceiling. A unit with a ceiling of 800 would be eliminated if its combat strength

fell below 120 points.

b. A unit is eliminated during the Logistics Phase if it fails to meet the maintenance

cost of 100 supply points after supply allocation.

c. Units eliminated as a result of combat have a chance of returning as cadres (See

table below). Cadre units will appear at the home base the turn following elimination

at the end of the Reinforcement Phase. Units eliminated during combat with less than

50 remaining supply points at the beginning of the combat automatically fail to

return as cadres and are removed from the game.

d. A unit is eliminated without a cadre being formed if it is surrounded by enemy units

and/or impassable hexes.

Unit Morale	% Chance to Return as Cadre
1	75%
2	80%
3	84%
4	86%
5	88%
6	89%
7	90%
8	91%
9	92%

e. Attacking units which eliminate a unit, whether it returns as a cadre or not, divide

the eliminated unit's remaining supply points evenly as captured supply which is made

readily available to those units.

f. During the Logistics Phase, Axis depot units located within four hexes of Tobruk which is Allied occupied and not surrounded by Axis units or ocean hexes are eliminated from the game if not stacked with another unit. This is triggered only if Axis units are east of Tobruk.

B. Logistics

1. Logistics Phase Procedure: During this phase the Allied player will allocate

replacements into his units. The Axis player will allocate supplies, replacements, and resupply priority to each of his units.

a. The Axis player cycles through his units first. Pressing R will allow the player

to allocate supplies and replacements into that unit. Depot units may only have

replacements allocated to them. They automatically receive 400 supply points

and are not resupplied during the game turn. Every unit must eventually be R keyed

to be able to exit this phase.

b. Players are first asked to input replacements (this is all that the Allied player

will input) by pressing 0-9. The number pressed will be the percent of the

maximum replacements allowed into the unit as shown below:

Input	Percent
0	0%
1	11%
2	22%
3	33%
4	44%
5	55%
6	66%
7	77%
8	88%
9	100%

A unit with a maximum of 100 replacements would receive 22 strength points if a

2 were pressed. see the turn chart for replacement allocations per side for each

game turn.

c. Following replacements, supplies are allocated to the unit in the same manner as

replacements. The number inputed is the percent of the maximum allowed into the

unit will be modified in the resupply phases. This percent is further modified

by .25 during resupply phases of the enemy player segment. For example, a unit

with a maximum of 400 supply points allowed which has a resupply priority of 5

would receive 220 supply points during his player segment's resupply phases and only 55 points during the enemy segment.

2. Supply: Each unit carries its own supply. In order for a unit to move, fortify, and attack it must consume supply. To receive supply a unit must be within supply lines.

a. Mobile units have a supply portage maximum of 600 points and non-mobile units

have 500 points. Units receive supply during the Logistics Phase, Resupply Phases,

and after combat when a unit has been eliminated. Axis units are limited by the

general supply pool. See turn chart which lists supply point reinforcements per

game turn. Allied units are always given the maximum supply points allowed since

their supply pool is unlimited in game terms. The number of supply points actually

received into the unit is modified by 1% per hex away from the home base. A unit

16 hexes away from its home base would have the amount actually received cut by 16%.

b. Movement, fortification, unit maintenance, and combat consume supply. See the

appropriate charts for these costs. Each unit must spend 100 supply points after

supply allocation during the Logistics Phase for unit maintenance. A unit unable

to do so is eliminated from the game.

c. A unit is either in supplied or unsupplied status. Unsupplied units may not receive

supply points during the Logistics phase and resupply Phases. To be in supply a

unit must be within range of a supply source. Home bases, Tobruk (if friendly), and

depots may be used as supply sources. A depot unit may be used as a supply source

only if it is within six hexes of the home base or Tobruk (if friendly) or within

six hexes of a chain of depot units no further than six hexes apart which lead to

the home base or Tobruk (if friendly). The ranges of the different combat units

are listed below:

Unit

Range

German	2
Human Allied	3
Computer Allied	4

Supply may be traced through any terrain and even enemy units so long as the range for the unit is not exceeded.

d. A unit eliminated has its remaining supply points immediately divided among the enemy units which caused the elimination.

e. If during the Logistics Phase, Tobruk is held by the Allies and not surrounded by Axis

units or ocean hexes then Axis depot units alone in their hex will be eliminated

if within four hexes of Tobruk and the overall Axis supply will be cut by 20%.

Axis units must be east of Tobruk in order for the above to be triggered. When this

occurs the message "Desert Rats Strike" will appear.

C. Movement

1. Procedure: movement occurs in the following phases: Operations Phase, Enemy Reaction Phase,

Depot Movement Phase, and limited reaction. In each phase the procedure for movement is

very much the same as outlined below:

a. When movement is allowed a white cursor appears on the map screen.

This cursor

may be moved to any hex on the map by pressing 1-6 to indicate direction and by

pressing T for the cursor to appear on Tobruk and B for the cursor to appear on

the home base.

b. To examine the contents of a friendly hex and to access units in order to move them

press G. Units in the hex will be displayed and numbered one to six much like the

example below:

1) 2- 100 400 18	2) 8- 600 450 36
3) 9- 250 400 30	4) 11- 300 300 20
5)13- 60 250 15	6) 16- 150 300 18

In the example above there are six units. Each unit has four numbers which are

the unit's number in the Order of Battle, combat strength, remaining supply points,

and remaining operation points (units in limited reaction will have displayed

remaining operation points still eligible to use). The first unit above is

unit #2 which is the 1st Depot Battalion. It has 100 combat points, 400 supply

points, and 18 operation points. Pressing F at this point will exit this display

and return the cursor on the hex. To access a unit press the number 1-6 which

corresponds to the desired unit.

c. A unit accessed will have its unit information displayed on the screen as in the

example below:

21 GE PZ DIV COMBAT: 600 MOBILE SUPPLIED

MORALE: 9 FORT: 2 SUPPLY: 450

TERRAIN: COAST OPERATION: 18 (36)

The unit above is the 21st German Panzer Division with a combat strength of 600,

a morale of 9 and a fortification level of 2. It has 450 remaining supply points

and 18 remaining operations points for that movement and 36 remaining for the

turn segments. It is a mobile unit in a supplied state currently located on a

coastal hex.

d. To move the accessed unit press 1-6 in the direction desired as indicated by the

compass on the screen. Pressing F at this time will return the cursor onto the hex.

Pressing B will fortify the unit by one additional level. Allied units eligible

for sea movement may press S to do so (see movement restrictions).

e. To exit the movement phase press the shift and the # key.

2. Allowances and Costs: All units are given allotments of operation points and supply

points which are expended during movement.

a. Axis mobile units receive 36 operation points per allotment. Axis nonmobile and

Allied nonmobile receive 18 operation points. Allied mobile units receive 28

operation points. Both sides receive allotments the first operations phase of the

game turn. Each side receives another allotment the second operations phase of

their player segment.

b. Units receive supply points based on several factors during the logistics Phase,

Resupply phases, and combat sequence. Mobile units have a supply portage maximum

of 600 points and nonmobile 500 points.

c. Supply and operation point costs for movement are summarized in the table below:

	Non-mobile operation/supply cost	Mobile operation/supply cost
Terrain		
Clear	3/9	3/9
Rough	4/12	8/24
Fortress	1/3	1/3
Town	1/3	1/3
Coast	1/3	1/3
Mountain	6/18	12/36

Impassable

P

P

The "P" means that it is prohibited for units to enter that hex. A unit may only

complete a movement action if it has sufficient supply and operation points.

d. Fortification costs for mobile units are 40 supply points and 7 operation points per level. Nonmobile costs are 32 supply points and 3 operation points.

3. Restrictions: There are several limitations, exceptions, and restrictions to

movement are listed below:

a. Garrison units may never move.
b. Depot units may only move during the Depot Movement Phase.
c. Units must have sufficient operation points and supply points to complete an action.
d. Units may not enter impassable hexes or ocean hexes.
e. No more than six units may ever be in the same hex. In Tobruk only four units

may stack together.

f. Allied units in Tobruk or Alexandria may be eligible to use sea movement. One unit per game turn may be transferred between Alexandria and Tobruk (or vice versa).

If units in Tobruk receive replacements then no sea movement is allowed for that turn.

Axis occupation of Tobruk cancels any sea movement orders.

g. A unit's fortification level returns to 0 when it moves from its current location.

h. During the operations and enemy reaction phases, movement into a hex unoccupied by friendly units next to an enemy unit will end the limited reaction.

k. During limited reaction, units may only expend up to 1/2 of their operation point allowance or remaining operation points, whichever is less, each time those units are accessed to be moved.

D. Combat

1. Combat Sequence Procedure: A unit initiates combat whenever it attempts to enter a position containing an enemy unit.

a. The combat sequence begins by allowing the attacking player to cycle

the defending units as many times as desired. For each unit he inputs Y, N, or F to the question "Attack Unit Y/N?". Inputting Y or N answers yes or no to the

question. A F input will finish the selection of defending units.

Unless a unit

has been entered with a Y the F key will set all units to an N answer.

For example,

if you press F to the very first defending unit your attack would be cancelled.

It would also be cancelled if you press N for every defending unit.

Please note

that depot units will not appear to be attacked unless they are alone in the hex without another combat unit.

b. When F is pressed for the defending unit selection the attacking player will then

cycle through his units in the attacking hex and input Y,N, or F in answer to

"attack with unit Y/N?". Units with insufficient supply and/or operation points

will be so displayed when a Y is input. As with the defending units an F input

finishes the selection marking units only inputed with a Y as the attacking units.

c. The attacking player selects a battle intensity (1-9), a level of risk (1-9), and

the number of allocated air points. The higher the intensity chosen the greater the

losses of the battle will be and the greater the cost of the battle in terms of

operation points and supply points. The higher the level of risk the greater the

random introduced in the combat results (see risk table). A player will be able to

allocate a maximum of 9 air points, or less if there are fewer remaining air points

per battle round. Players receive air points each game turn according to the turn

chart. These points are cumulative from turn to turn. The available air points are

reusable each phase of the game turn and are subject to air casualties (see air loss

table). Each air point increases the attacker's strength by 20% and the defender's

by 15%.

d. The defender chooses a level of risk (1-9) and the number of allocated air points.

e. Losses are displayed for each unit and the combat results for the battle is also

(see combat results explanation).

2. Combat Costs: Combat consumes supply and operation points. See the enclosed charts

which list costs for combat in supply and operation points. Human Allied units

consume 30% more supply in combat. The defender consumes 50% less supply in combat

than the attacker. The attacker also consumes more operation points than the defender

(see appropriate combat charts).

3. Combat Restrictions and Special Cases: A unit must have sufficient operation and

supply points to attack. Some other special cases also apply.

a. Allied units must have at least 200 supply points and 6 operation points to be

allowed to attack. Axis units must have a minimum of 100 supply points and

- 4 operation points.
- b. Depot units may only be attacked if no other combat units exist in the hex.
- c. Units with less than 50 supply points have their strength cut by one half.
- d. Defending units consume less supply and operation points.
- e. Units eliminated in combat may return as cadres if they have more than 50 supply points remaining. See cadre table.
- f. Victorious units share the remaining supply points of the eliminated unit.
- g. During a limited reaction phase only one attack is allowed before play is passed to the phasing player.

4. Battle Odds Calculation: Several factors govern odds calculation.
- a. the defender's combat strength is then multiplied by supply. If it has less than 50 points its strength is cut by 1/2.
- b. The defender's combat strength is then multiplied by the sum of the terrain and fortification modifiers. This value may not exceed three times the original strength. The fortification level of the unit is multiplied by .2 to derive the fortification modifier which is added to one of the terrain modifiers below:

Terrain	Modifier
Clear	1.0
Coast	1.5
Rough	2.0
Town	2.0
Fortress	2.5
Mountain	2.5

- c. The defender's strength is then modified by the air points entered by the defending player. Each point increases the strength by 15%. The modified combat strength after air power may not exceed 4.5 times the original strength. Air points may be lost as a result of combat (see air loss table).
- d. Example (defender's modified strength): If a defending unit has 100 combat points, 200 supply points, is located in a town, has a fortification level of 4, and allocates 3 air points, its modified combat strength would be 406. The supply modifier would be 1.0 since the unit has more than 50 supply points. The terrain modifier of 2.0 and the fortification modifier of 0.8 add up to 2.8. The original combat strength multiplied by 2.8 equals 280. The 280 is multiplied by the air power modifier of .45 (15% per air point) to arrive at a modified strength of 406.
- e. The attacker's combat strength is first modified by air points allocated by the attacker. each air point increases the attacker's strength by 20%. Air points may

be lost as a result of combat.

f. The attacker's combat strength is then modified by combat bonuses determined by nearby units not directly involved in combat. The attacker adds 300 combat points per friendly hex next to the defending units. The attacker also adds 100 combat points per non-participating friendly unit in the attacker's hex. The attacker subtracts 200 combat points from its strength for each non-participating enemy unit in the defender's hex and per friendly hex next to the defender's hex. The attacker's modified strength may be no less than 1/3 of, or 2.5 times greater than its original strength.

g. Example (attacker's modified strength): If attacking units have a original strength of 1500 points, inputed 5 air power points, had 2 non-participating friendly units in the attacking hex, 1 friendly unit next to the defender's hex, 3 non-participating enemy units in the defender's hex, and 2 enemy units next to the defender's hex the modified attacker's strength would be 2500. The 1500 is multiplied by 2.0 for airpower(20% per air point) for an increase to 3000. 200 points are added for the non-participating units in the attacker's hex and 300 for the unit next to the defender's hex for a modified strength of 3500. 600 points are subtracted for the non-participating enemy units in the defender's hex and 400 points for the two enemy units next to the defender's hex for a final modified strength of 2500 points.

h. Battle odds are determined by dividing the attacker's modified strength by the defender's modified strength.

5. Loss Determination: Several factors determine the losses to the attacking and defending units.

a. The overall attacker's losses are determined by first calculating the base loss.

The base loss is equal to 5 plus the level of battle Intensity times .006 times the attacker's combat strength (unmodified).

b. To arrive at the attacker's losses the base loss is multiplied by the risk factor

and then added to the number of defender's air points allocated to the battle.

The risk factor is a random depending on the level of risk chosen by the attacking

and defending players. The risk factor is randomized separately for the attacker

and defender. See risk table below:

Sum of Att. and Def. Risk	Random
2	.97 to 1.08
3	.95 to 1.12
4	.93 to 1.16
5	.91 to 1.20
6	.89 to 1.24
7	.87 to 1.28
8	.85 to 1.32
9	.83 to 1.36
10	.81 to 1.40
11	.79 to 1.44
12	.77 to 1.48
13	.75 to 1.52
14	.73 to 1.56
15	.71 to 1.60
16	.69 to 1.64
17	.67 to 1.68
18	.65 to 1.72

c. If the attacker's strength was 1000, the battle intensity 9, and the sum of the

defender's and attacker's risk 12 then the attacker's overall losses would range from 70 to 129.

d. The overall attacker's losses are now distributed proportionately (according to size

of unit in strength) among the attacker's units. An attacking unit's assignment of

losses is further modified by its morale according to the chart below:

Morale	Loss Modifier
1	1.6
2	1.5
3	1.4
4	1.3
5	1.2
6	1.1
7	1.0
8	.9
9	.8

As a result, the total losses of the attacker will probably exceed the original

overall losses after being modified by the unit's morale.

The defender's losses are determined in the same manner as the attacker's except the

number of attacker's air points are used instead of the number allocated by the

defender. The second and most important difference is that the defender's losses

are increased by the odds. The more favorable the odds for the attacker the more

losses the defender will suffer. The formula for the defender's overall losses is

therefore, the base loss times the odds times 1/2 added to the base loss times the

risk factor added to the number of air points allocated by the attacker.

V. SOLITAIRE PLAY

When playing against the computer you will command the Axis forces and the computer

the Allied forces. The following rule changes will be in effect.

1. The Allies will be luckier by about 20%.
2. Allied units have to be within four hexes of a depot.
3. Allied units expend less supply in combat than normally.
4. Allied units have less of a chance to trigger limited reaction during movement.
5. Allied units come on board with more strength as cadre units.
6. Allied units have a decreased chance of being eliminated with no cadre being formed.
7. Strength points displayed on screen are randomized.

VI. STRATEGY AND TACTICS

Below are some helpful hints on how to play the game.

1. Towns are very important to take since they provide so many victory points. Benghazi

and Bardia are especially useful since they control avenues of approach. Tobruk is

important as a supply source and also for the number of victory points received.

Since points are given for towns each turn the quicker you take a town the longer

you hold it the more victory points you will enjoy.

2. Protect your home base at all costs since loss of it is an automatic defeat.

3. The first turn of the game the Axis should be able to take Bardia and surround Tobruk.

4. Always move your units as far forward as you dare since you receive more victory points

per unit the farther you are from your home base.

5. be careful of your supply lines, since unsupplied units cannot take in supply or

replacements and become eliminated if unable to meet their maintenance cost.

6. Be aware that if your front line is past Tobruk and Tobruk is not surrounded you will

be hit by the Desert Rats which will cost you supply and perhaps depot units.

7. When you attack take into account the combat bonuses given by units next to the

defender and in the attacker's and defender's hex. also be careful not to overkill

your enemy by too intensive an attack. air power is a percent modifier; therefore,

it is more effective when used with large attacking groups.

8. Be careful not to totally spend the supply of your individual units since their

strength will be 1/2 of normal when defending and if eliminated will not return as cadre.

9. When defending keep in mind that units in the hex under attack and units next to the defender's hex serve as a significant combat bonuses. Cadres are good for this role behind lines. Also when defending be aware of the value of fortification, but be sure not to over-fortify. Note also that rough, fortresses, and towns are superior terrain to defend on. Generally speaking, a good defense is an aggressive defense with careful and well planned counter-attacks. Keeping strong units in reserve can be a powerful counterbalance to an enemy offensive.
10. While on the offensive it is generally better to outflank a strong point and expose its supply line rather than hitting it head on.
11. When heavily outnumbered, retreating is the best strategy since the enemy will have burn supply and operation points to pursue you. Weak screening in front of your retreating forces will additionally slow the attacker.
12. The El Alamein line can be a difficult nut to crack and almost impossible. The British will be invariably building for a crushing offensive. for that reason the Axis player should attack the El alamein line until he is no longer eliminating units and then fortify. When the british launch their final offensive even a fortified line will not hold and careful planning must be made for an organized retreat.
13. Be aware that depots move in their own phase after regular combat unit movement. Until you have an established line they will always be playing "catch-up".
14. In the Logistics Phase give high resupply priorities to those units which you expect to be heavily using their supply. To conserve supply use only the minimum number of depots from the home base.

VII. DISPLAY

An example of the display is shown below:

```

DATE: 1-1942   KNIGHTS OF THE DESERT           SCORE: -519
ALLIED: AIR 14/20 SP_____ALREPL 138 SEALIFT 1       VP 2285
AXIS: AIR 15/18   SP 1186  ITREPL 20   GERREPL 100   VP 1766

```

The current turn is January-February 1942. The score is -519 with The Allied Player having accumulated 2285 victory points and the Axis player 1766 victory points.

The Allied player has 20 air points available for use with only 14 available to use currently in this Operation Phase. He has used 6 airpoints already on missions in

the operations Phase. The Axis player has 18 air points available with 15 ready to use

in the current Operation phase. He has used 3 airpoints on missions in this phase.

The Axis player has 1186 supply points left. The British player has unlimited supply

base so its supply points are not shown.

The Allied player has 136 replacement combat points left, the Italian player 20

replacements, and the German player 100 replacements left.

The Allied player can sealift one unit.

VIII. SUMMARY OF KEYBOARD INPUTS

LOGISTICS PHASE

(D) Access Display

(R) Ready to allocate Repl/Supply/Resupply to unit

(F) Finished with unit. Skip unit temporarily until next round.

(0-9) Replacements Allocate replacements to unit.

(0-9) Supply Allocate Supply to unit.

(0-9) Resupply Allocate resupply value to unit.

INITIATIVE PHASE

(Y) Yes Player wishes to move/attack first.

(N) No Let enemy player move/attack first.

*OPERATIONS PHASE CURSOR MODE

(T) Tobruk Move cursor to Tobruk.

(B) Base Move cursor to friendly home base.

(G) Get unit Display friendly units in hex. (See Selection of Unit.)

(1-6) Moves cursor across map in directions 1-6.

(#) Exits the current Phase.

OPERATIONS PHASE SELECTION OF UNIT

(F) Finished - Program returns back to Operations Phase Cursor Mode.

(1-6) Selects unit to be moved.

**OPERATIONS PHASE MOVEMENT OF UNIT

(B) Build fortification Unit's fortification level increased by 1 level.

(S) Sea movement Allied unit moves from Tobruk to Alexandria;vice-versa.

(F) Finished Unit finished movement. Return to Cursor Mode.

(1-6) Moves unit across map. An attempt to enter enemy hex results in Combat.

OPERATIONS PHASE - ATTACK ENEMY UNITS

(Y) Yes You wish to attack unit displayed.

(N) No You do not wish to attack with the friendly unit displayed.

(F) Finished - Proceed to Attacker's Battle Intensity/Risk/Air

ATTACKER'S BATTLE INTENSITY/RISK/AIR

(1-9) Battle Intensity for attacker. 1 is light attack, 9 is heavy attack.
 (1-9) Risk for attacker. 1 is low risk, 9 is high risk.
 (0-9) Air points committed. 0 is no air points, 9 is 9 air points committed.

DEFENDER'S RISK/AIR

(1-9) Risk for defender.
 (0-9) Air points for defender.

ADDITIONAL KEYS

(0) Center cursor on screen
 (R) Removes units from map
 (M) Prints strategic map
 (D) Prints display

IX.ORDER OF BATTLE

Abbreviations:

REG = regiment PZ = Panzer GE = German SA = south african
 BATT = battalion INF = Infantry IT = Italian NZ = New zealand
 DIV = division ARM = armor BR = British FR = French
 BRIG = brigade NMOBILE=non mobile AUST = Australian FA = Fascist
 GARR = garrison MOBILE = Mobile IND = Indian GRIN = greek/Indian
MISC SAPI=

So.African/Polish/Indian

UNIT#	NAME OF UNIT	COMBAT	AXIS UNITS		TYPE	DATE
			COMBAT	MORALE		
1	1 AXIS GARR REG	100	300	3	NMOBILE	START
2	1 AXIS DEPOT BATT	30	200	1	NMOBILE	START
3	2 AXIS DEPOT BATT	30	200	1	NMOBILE	START
4	3 AXIS DEPOT BATT	30	200	1	NMOBILE	START
5	4 AXIS DEPOT BATT	30	200	1	NMOBILE	START
6	5 AXIS DEPOT BATT	30	200	1	NMOBILE	START
7	6 AXIS DEPOT BATT	30	200	1	NMOBILE	START
8	21 GE PZ DIV	665	800	9	MOBILE	START
9	200 GE INF REG	280	400	8	MOBILE	START
10	ARIETE IT ARM DIV	560	600	5	MOBILE	START
11	7/TRENTO IT MECH REG	175	200	6	MOBILE	START
12	TRENTO IT INF DIV	385	400	4	NMOBILE	START
13	BRESCIA IT INF DIV	245	300	4	NMOBILE	START
14	SABRATHA IT INF DIV	45	300	4	NMOBILE	START
15	PAVIA IT INF DIV	210	300	4	NMOBILE	START
16	BOLOGNA IT INF DIV	210	300	4	NMOBILE	START
17	SAVONA IT INF DIV	210	300	4	NMOBILE	START
18	15 GE PZ DIV	700	800	9	MOBILE	5-1941
19	90 GE INF DIV	350	400	6	MOBILE	7-1941
20	9/TRIESTE IT MECH REG	245	300	5	MOBILE	9-1941
21	TRIESTE IT INF DIV	210	300	4	MOBILE	9-1941
22	LITTORIO IT ARM DIV	315	400	4	MOBILE	1-1942
23	SNDVRBD GE INF REG	245	300	6	MOBILE	3-1942
24	RANCHE GE INF BRIG	385	400	8	NMOBILE	7-1942
25	164 GE INF DIV	560	600	6	MOBILE	7-1942

26	PISTORIA IT INF DIV	210	300	5	NMOBILE	7-1942
27	FOLGORE IT INF DIV	175	200	5	NMOBILE	7-1942
28	YOUG FA IT INF DIV	105	200	2	NMOBILE	7-1942

ALLIED UNITS

COMBAT

DATE	UNIT#	NAME OF UNIT	COMBAT	CEILING	MORALE	TYPE	ARRIVAL
	29	1 BR GARR REG	600	600	3	NMOBILE	AT START
	30	1 BR DEPOT BATT	100	200	1	NMOBILE	AT START
	31	2 BR DEPOT BATT	100	200	1	NMOBILE	AT START
	32	3 BR DEPOT BATT	100	200	1	NMOBILE	AT START
	33	4 BR DEPOT BATT	200	200	1	NMOBILE	AT START
	34	5 BR DEPOT BATT	200	200	1	NMOBILE	AT START
	35	6 BR DEPOT BATT	200	200	1	NMOBILE	AT START
	36	2 BR ARM DIV	280	600	5	MOBILE	AT START
	37	9 AUST INF DIV	590	600	5	NMOBILE	AT START
	38	MISC SAPI INF DIV	290	300	5	NMOBILE	AT START
	39	70 BR INF DIV	350	400	5	NMOBILE	AT START
	40	4 IND INF DIV	390	400	5	NMOBILE	AT START
	41	7 BR ARM DIV	315	900	6	MOBILE	5-1941
	42	22 BR ARM BRIG	245	500	5	MOBILE	5-1941
	43	1 BR ARM BRIG	245	300	5	MOBILE	5-1941
	44	1 SA INF DIV	370	400	3	NMOBILE	5-1941
	45	2 NZ INF DIV	465	600	5	NMOBILE	5-1941
	46	5 IND INF DIV	350	400	5	NMOBILE	7-1941
	47	2 SA INF DIV	315	400	3	NMOBILE	7-1941
	48	1 BR ARM DIV	595	800	6	MOBILE	11-1941
	49	50 BR INF DIV	465	500	5	MOBILE	1-1942
	50	FREE FR INF DIV	245	300	6	NMOBILE	1-1942
	51	10 BR ARM DIV	665	700	5	MOBILE	3-1942
	52	10 IND INF DIV	210	300	5	MOBILE	5-1942
	53	51 BR INF DIV	560	600	5	MOBILE	7-1942
	54	44 BR INF DIV	560	600	7	MOBILE	7-1942
	55	8 BR ARM DIV	700	700	5	MOBILE	7-1942
	56	MISC GRIN INF DIV	140	200	5	NMOBILE	7-1942

X. CHARTS AND TABLES

REINFORCEMENTS CHART

DATE	INITIATIVE	GE AIR	BR AIR	GE SUPPLY	GE REPL	IT REPL	BR REPL
1941 MAR	GERMAN	3	0	7000	80	250	600
1941 MAY	BRITISH	0	3	7000	80	250	600
1941 JULY	BRITISH	3	3	6000	80	175	350
1941 SEPT	BRITISH	3	3	6000	80	175	350
1941 NOV	BRITISH	3	3	6000	80	175	350
1942 JAN	GERMAN	0	3	10000	375	400	350
1942 MAR	GERMAN	3	3	10000	750	800	350
1942 MAY	GERMAN	9	3	10000	750	800	350
1942 JULY	GERMAN	3	9	10000	375	400	350
1942 SEPT	GERMAN	3	6	6000	80	175	350
1942 NOV	BRITISH	3	6	6000	80	175	1600
1943 JAN	BRITISH	3	3	6000	80	175	350

TERRAIN EFFECTS CHART

TERRAIN	NMOBILE MP COST	MOBILE MP COST	DEFENSE	MAX FORT	NMOBILE/MOBILE SUPPLY COST
CLEAR	3	3	1.0	LEVEL 9	9/9
ROUGH	4	8	2.0	LEVEL 5	12/24
FORTRESS	1	1	2.5	LEVEL 3	3/3
TOWN	1	1	2.0	LEVEL 5	3/3
MOUNTAIN	6	12	2.5	LEVEL 3	18/36
COAST	1	1	1.5	LEVEL 8	3/3
LAND/IMPASSABLE	N/A	N/A	N/A	N/A	N/A

Note: for each level of fortification a defending unit adds 20% to its combat strength.

The terrain defense modifier and the fort level modifier cannot exceed 3.

COMBAT SUPPLY CHART

BATTLE INTENSITY	ATTACKER				DEFENDER		
	NONMOBILE		MOBILE		NONMOBILE		MOBILE
ALLIED	AXIS	ALLIED	AXIS	ALLIED	AXIS	ALLIED	AXIS
1	38	49	45	59	19	19	23
23							
2	50	65	60	78	25	25	30
30							
3	63	82	75	98	32	32	38
38							
4	75	98	90	117	38	38	45
45							
5	88	114	105	137	44	44	53
53							
6	100	130	120	157	50	50	60
60							
7	113	147	135	176	57	57	68
68							
8	125	163	150	195	63	63	75
75							
9	138	179	165	215	69	69	83
83							

Note: Supply costs for the computer-allied is the same as for the axis.

COMBAT LOSS CHART

DEFENDER ATT CP	BATTLE INTENSITY									
	1	2	3	4	5	6	7	8	9	10
100	5	6	6	7	8	8	9	9	10	
2										
200	6	7	8	9	11	12	13	14	15	
3										
300	6	8	10	12	14	15	17	19	21	
3										
500	8	11	14	17	20	23	26	29	32	
3										

COMBAT OPERATION CHART

BATTLE INTENSITY	ATTACKER		
	AXIS	ALLIED	AXIS
1	4	5	1
2	5	6	2
3	5	6	2
4	6	7	2

800	9	14	19	24	29	33	38	43	48	5	6	7	2
3													
1000	11	17	23	29	35	41	47	53	59	6	7	8	2
3													
1500	14	23	32	41	50	59	68	77	86	7	7	8	2
3													
2000	17	29	41	53	65	77	89	101	113	8	8	9	2
3													
2500	20	35	50	65	80	95	110	125	140	9	8	9	2
3													
3000	23	41	59	77	95	113	131	149	167				

AIR LOSS TABLE

MORALE TABLE

# pts. allocated	Chance to destroy 1 enemy air pt.	MORALE	MODIFIER
0	9%	1	1.6
1	36%	2	1.5
2	36%	3	1.4
3	40%	4	1.3
4	42%	5	1.2
5	44%	6	1.1
6	46%	7	1.0
7	48%	8	.9
8	50%	9	.8
9	52%		

COMBAT RISK TABLE

UNIT CADRE TABLE

RISK TOTAL	LOSS MODIFIER	MORALE	%chance to Return as Cadre
2	.97-1.08	1	75%
3	.95-1.12	2	80%
4	.93-1.16	3	84%
5	.91-1.20	4	86%
6	.89-1.24	5	88%
7	.87-1.28	6	89%
8	.85-1.32	7	90%
9	.83-1.36	8	91%
10	.81-1.40	9	92%
11	.79-1.44		
12	.77-1.48		
13	.75-1.56		
14	.73-1.58		
15	.71-1.60		
16	.69-1.64		
17	.67-1.68		
18	.65-1.72		

DEFENDER ODDS

AIRPOWER TABLE

ODDS	MODIFIER	# AIR	LOSS
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.5-1.	.25	0	0
1-1	.50	1	1
2-1	1.00	2	2
3-1	1.50	3	3
4-1	2.00	4	4
5-1	2.50	5	5
6-1	3.00	6	6
7-1	3.50	7	7
8-1	4.00	8	8
		9	9

Attacker Losses: Find the loss in the Combat Loss Chart Multiply this loss by Risk and add losses due to Defender's Airpower. These losses are distributed among attacking units according to their combat strength. Each unit has its loss multiplied by the Morale modifier.

Defender Losses: Same as Attacker except also modify the loss in Combat Loss Chart by the odds modifier along with the risk.

VICTORY CHART

Compare your score to the ranges below for the level of victory.

Tobruk'41	Tobruk'42	El Alamein	Camp.'41	Camp.'42	Campaign	Victory
Level						
<-130	<-60	<-400	<-30	<-700	<-900	Allied
Strategic						
-130 to -31	60-179	400-599	30-129	700-899	900-1199	Allied
Tactical						
-30 to 49	180-249	600-799	130-219	900-1099	1200-1599	Allied
Marginal						
50-119	250-399	800-999	220-364	1100-1299	1600-1999	Axis
Marginal						
120-219	400-549	1000-1599	365-479	1300-1499	2000-2399	Axis
Tactical						
220+	550+	1600+	480+	1500+	2400+	Axis
strategic						