# Clear for Action

## Naval Combat in the Age of Sail



**For the TI 99/4A Computer**

# Author's Note

Clear for Action is a game of strategy pitting you against the computer in a pitched naval battle in the age of the great sail battleships of the 18th century. You are in command of a single ship and you have to demonstrate an excellent understanding of the basic principles of sailing, gun and crew management, as well as tactical acumen in order to prevail and win the day.

This game is based on a 1984 Avalon Hill computer game of the same title developed by *Michael W. Stradley* for the Atari and TRS-80 computers. One of the distinguishing features of that game was that it included 2 very detailed manuals that laid out the mechanics of play including formulas and tables (but not the AI algorithm), a fact which allowed me to re-create the essence of gameplay without using any of the original code. Given the significant differences between the TRS-80 and the TI 99/4A computers however, a lot of artistic license was taken in the design of the game to take into account some of the shortcomings as well as advantages of the TI, although I believe that it remained faithful to the original concept.

It is my hope that it will provide you with an interesting challenge and afford you the opportunity to slip into the shoes of the commanders of the day and experience the thrill and challenges of naval battle.

*Walid Maalouli*

*November 2011*

# Running the Game

This game requires:

- 32K RAM
- Disk drive
- Extended Basic cartridge


To run the game, place the program disk into the first disk drive (DSK1) and type

      RUN "DSK1.ACTION" then press the ENTER key


Note: while this game was designed to run from DSK1, you can fairly easily modify it to run from any other device such as another drive, RAM disk or hard drive. Please refer to **Appendix B** for details on how to patch the game for that purpose. Running the game from a RAM or hard disk will likely speed up loading and gameplay significantly.

If you are running the game from within an emulator, you may use the overdrive or turbo feature if available to improve loading times. This game has been tested using the **Classic 99 emulator** in Overdrive mode with no issues identified except that the in-game messages and notifications will have a shortened screen time. Please refer to **Appendix B** for details on how to patch the game to adjust the messages screen time.

**Please remember to keep the Caps Lock key depressed during the game.**

# Gameplay

## Scenario Selection

Upon running the game, you are presented with the title screen. Press any key to dismiss, and then you are presented with a choice of either loading a scenario or creating a new one.
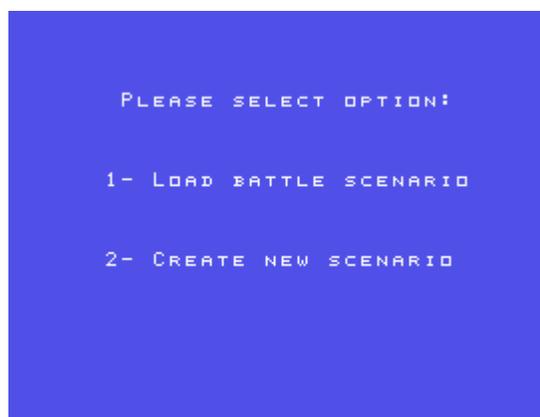


If you select to load a scenario, then you will have the option of either selecting one of the 8 built-in historical scenarios or load one from disk. Pressing 0 will take you back to the previous menu.
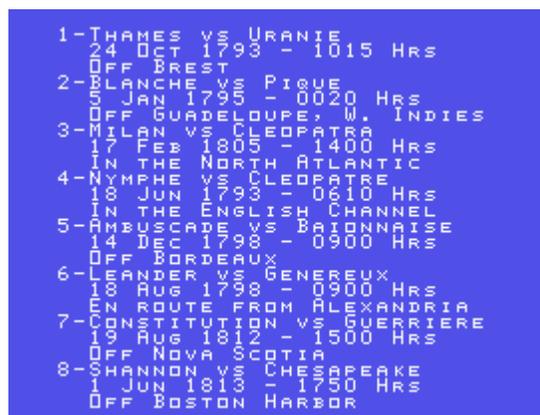


The details about the built-in scenarios can be found in **Appendix A**. If you choose to load a previously saved scenario from disk, simply enter the filename at the

prompt and you will then be given the opportunity to edit the details of the scenario. If you enter a blank filename, then you will be taken back to the initial menu.

On the other hand, should you choose to create a new scenario, then you will be prompted to enter values for the 2 opposing ships in turn for the following parameters (details about each to be discussed later in the manual):

- Name (up to 10 characters)
- Nationality (up to 10 characters)
- Sailing class
- Hull strength
- Crew complement
- Total gun fire power
- Long guns fire power
- Carronades fire power
- Initial heading
- X grid coordinate
- Y grid coordinate



Once you accept the entries, you will be prompted to enter a wind direction value (0-7) with 0 being north and 4 south. This wind direction will remain fixed for the duration of the battle. Once all the data has been entered, you may then save the scenario to disk for later use if you wish.  If you had chosen to load a scenario from disk, you will be presented with the same screens, except that the fields will

be pre-populated and you may edit them at will or just press ENTER to accept the values.

Once the scenario has been set up, then you will need to select which of the 2 ships you want to command, at which point the main game will load and launch.

## Game Phases

Clear for Action consists of 3 main playing phases:

- Sail set and helm orders
- Gun fire, reloading and boarding orders
- Ship status and crew management

*On a standard TI 99/4A system with a floppy drive, there will be a loading time of approximately 25-40 seconds between each phase due to the fact that each phase is a separate program which needs to be loaded along with the necessary game data every time it is called. This is unfortunately a limitation of Extended Basic, however you can significantly shorten the loading time by using a RAM disk or a hard drive, or even an emulator in accelerated mode.*

### Sail Set and Helm Orders Phase

Once the main game is loaded, you will be presented with a playing field as depicted below
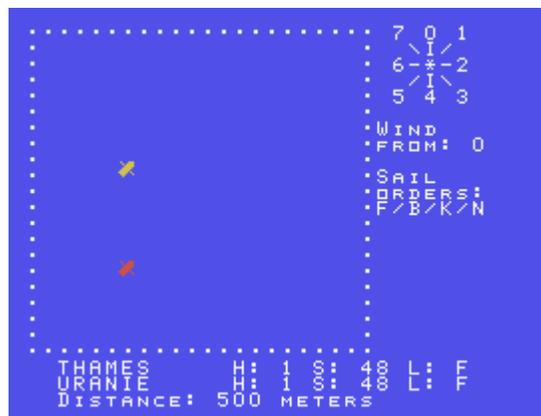
The dotted square area is the ship action area, with each side representing 1,600 meters (1.6 kilometers) in length for a total area of 2,560,000 square meters (2,560 square kilometers). The ships are represented as icons with the pointed end indicating the direction of sail. Your ship is always colored red, and the computer's yellow. The X and Y coordinates of the ships are specified in the scenarios, and can vary from 0 to 1600, with the (0,0) origin being over the left upper corner.

Below the action area are the names of the ships as well as their current sailing status:

H: heading (0-7)

S: Speed (All ships start with an initial speed of 48)

L: Sail set (F=Full sails, B=Battle sails, K=Back sails)

The current distance between the ships in meters is displayed on the bottom of the screen.

On the right upper corner of the screen you will see a compass rose with numbers from 0 to 7:

0: North

1: North East

2: East

3: South East

4: South

5: South West

6: West

7: North West

You will use that compass rose to visualize wind direction and ship orientation. Below the rose is the wind direction *from which* the wind is blowing. In other words, if wind direction is from 0, that means the wind is blowing from the North, i.e. the top of the screen towards the bottom. Wind direction has important implications regarding speed and ship maneuvering.

The first decision you will need to make as a captain is your sail set. Sailing warships had three major sail sets:

> **F**ull Sails: In this configuration, all your sails are unfurled and used to provide maximum speed to your ship. However, this configuration is also very vulnerable to enemy fire given the large surface area.

> **B**attle Sails: This is the recommended configuration when you are engaged in battle. It provides the least practical surface area while still providing adequate speed. The trick here is determining when to go for battle sails versus full sails depending on your ship, and the enemy ship's, condition.

> Bac**K** Sails: This is a special sail configuration used to slow down or even completely stop your ship. This is convenient if you have overtaken the enemy ship and need to slow down so you can bring it abreast and fire a broadside for example.

In order to place a sail set order, simply press the corresponding letter for the requested sail set, or press **N** to keep the current sail set unchanged. However, the ability of your crew to carry out your sail orders will depend on the number of crew assigned to the decks, the crew quality, and the hull strength. Combined, these factors make up the *Crew Sail Manning Factor (CSMF)*, and if it is too low, then your sail order will fail, and the computer will display the message FAILED! on the screen. Since crew quality is a fixed value for the entire scenario and hull strength goes down as your ship takes damage, the only way to possibly increase the CSMF is to increase the number of crew on the deck. If your order succeeds, then the appropriate sail set will be displayed in your ship status below the action area.

Furthermore, even if you have a high enough CSMF, in order to order Back Sails you will need to be C*lose Hauled* or *on Beam Reach*, otherwise your order will fail. Below are the classic points of sail, with the arrows indicating your ship's heading:
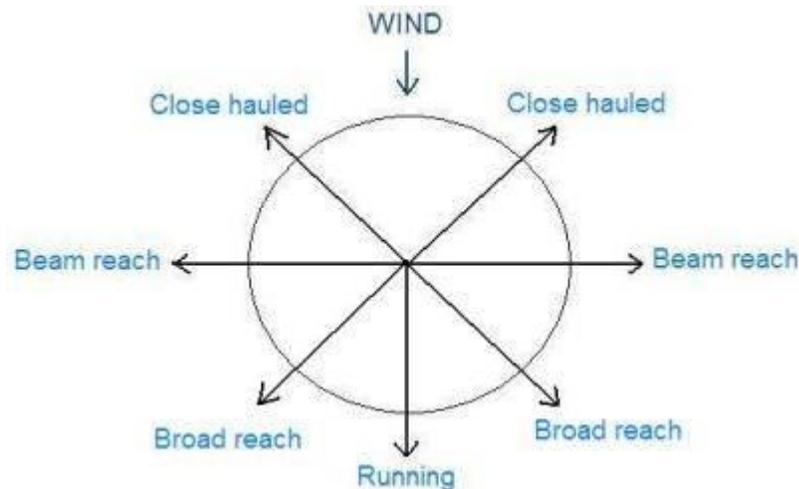


Your ship's point of sail has a significant effect on final speed, with Close Hauled being the *slowest*, followed by Running, Beam Reach and Broad Reach which is the *fastest*. In addition, your ship's final speed is also dependent on your sail set, mast damage, sailing class, and base speed and the change is not instantaneous but rather occurs gradually. *The higher the sailing class, the faster the ship*.

After you have entered your sail set order, you will then be asked to enter turning orders. You may turn to **P**ort (left), **S**tarboard (right), **T**ack (turn across the wind) or **N**o change (heading will remain the same). *You cannot turn if your speed is less than 48.*

Turning is also dependent on the CSMF, although it is more forgiving. However, **you cannot turn directly into the wind** unless you are tacking. In order to tack, you need to be Close Hauled and have a nearly perfect CSMF because it is a very taxing maneuver for the crew. Furthermore, *tacking takes 2 turns to complete*, with the ship turning into the wind on the first turn, then going into the opposite

Close Hauled point of sail on the second turn. On that turn, the computer will display TACKING! and will not give you the option to change sail sets or heading.

Should your helm order fail, then FAILED! will be displayed. After you have finished with your sail and helm orders, the computer will determine and execute its own orders and then the ships will move accordingly on the screen and their status as well as distance will also be updated. If the final position of any particular ship takes it beyond the action area border, then it will reappear along the opposite border.

*Important: although you enter your orders before the computer, no action is taken until both you and the computer have entered your respective orders, so in effect sail sets and helm orders are simultaneous rather than sequential.*

On the following turn, if the distance between the ships is 120 meters or less, then there is a chance that the sails of the ships will become **fouled** (entangled), which will effectively bring the speed of both ships to zero. *The closer the distance between the ships, the higher the fouling probability*. Should that happen, then FOULED! will be displayed and a small F will appear next to the name of both ships in the status area. In the subsequent turns, you will be given the option of un-fouling the sails, which chance of success is also probabilistic based on the distance between the ships. As long as the ships are fouled, no sail set or helm orders will be possible and NO MVT! will be displayed at the beginning of the phase. Depending on its strategy, the computer may or may not also attempt to un-foul the sails.

In addition, if the distance between the ships is 120 meters or less, you will be given the option of **grappling** the enemy ship, and the probability of success increases the closer the ships are to each other. If you succeed, then a small G will appear next to the enemy ship's name in the status area and both ships' speed will fall to zero. Grappling is essential for boarding action. On the subsequent turns, you will be given the option of removing the grapples if you so wish so, and success is also probabilistic based on the distance between the ships. As usual, your computer opponent may or may not choose to also grapple you or release the grapples depending on its internal assessment of the situation. The speed of

both ships will remain zero as long as either or both ships are grappled, and NO MVT! will be displayed at the beginning of the phase with no option to change the sail set or the ship's heading available unless un-grappling is successful.

This completes the sail and helm orders phase, and the message PLEASE WAIT… will be displayed while the next phase loads. This is a good time to think about strategy.

**Gun Fire, Reloading and Boarding Phase**

The guns of the ships have a bearing arc of 45° from either side of their centerline and will not be able to acquire a target outside of that arc. At the beginning of that phase, if your guns do not bear, then the message GUNS DO NOT BEAR will be displayed and you will not be given the option to fire subsequently.

Regardless of whether your guns bear or not, the reloading status of your guns will be displayed.
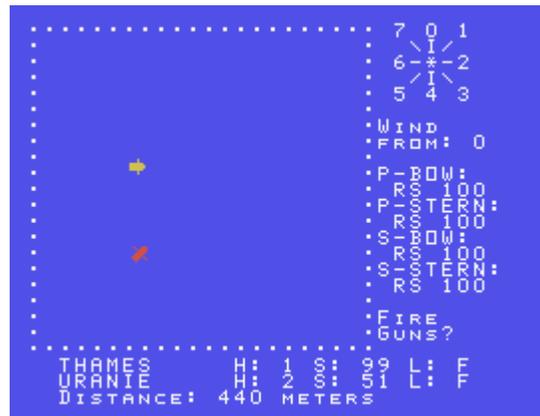


Your guns are distributed over 4 different ship sections, and are a mix of long guns and carronades in a proportion dependent on your ship's characteristics. The sections are:

- Port bow (P-BOW)
- Port stern (P-STERN)
- Starboard bow (S-BOW)
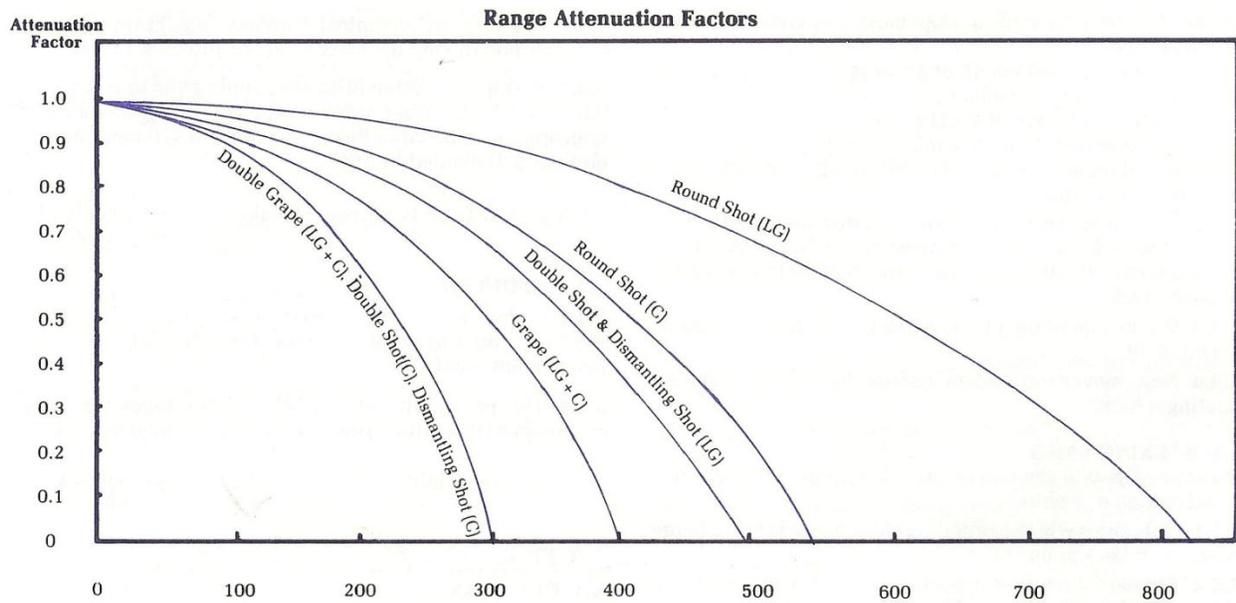- Starboard stern (S-STERN)

These sections are listed on the right-hand side of the screen. Underneath each section will be the type of shot currently selected for that section, as well as the reloading percentage which varies from 0 to 100. The ships of that era were generally equipped with 2 types of guns:

- Long guns – These typically had long ranges up to 800 meters depending on the type of ammunition loaded and were the main type of gun used.
- Carronades - Served as a powerful, short-range anti-ship and anti-crew weapon, and were an adjunct to the long guns.

Different types of ammunition were used, each with a specific purpose. Round shot (**RS**) was a solid ball intended to cause structural damage to the ship and its weight varied from 9 to 32 pounds. You could also double shot (**DS**) your guns for greater effectiveness, but at the expense of range. Other types of ammunition included grapeshot (**GP**) and double grapeshot (**DG**), which were mainly anti-personnel weapons consisting of hundreds of musket balls in a serge bag. The last type of ammunition available in this simulation is the dismantling shot (**DM**), a common form being two cannonballs chained together and designed to tear up the standing rigging which supported the masts and spars, causing them to crash.

The loading of the guns is not instantaneous, and depends on the number of effective gun strength in each section, the type of gun being reloaded, the number of crew assigned to the side of the guns being loaded, the morale of the crew, the type of shot being loaded and the quality of the crew.

At that point, and assuming your guns are able to bear on the enemy ship, you will be given the option to fire your guns. Your decision to fire will need to take into account the range of the opposing ship as well the reloading percentage on the side that will fire. This last factor will be determined automatically by the computer depending on your ship's orientation. The chart below should give you an idea of the different range characteristics of each gun with each type of ammunition:

**Range Attenuation Factors**

Attenuation Factor

- 1.0
- 0.9
- 0.8
- 0.7
- 0.6
- 0.5
- 0.4
- 0.3
- 0.2
- 0.1
- 0

Double Grape (LG + C), Double Shot(C), Dismantling Shot (C)

Grape (LG + C)

Double Shot & Dismantling Shot (LG)

Round Shot (C)

Round Shot (LG)

0   100   200   300   400   500   600   700   800

The range attenuation factor essentially indicates the potential damage your guns will inflict on the opposing ship, with 1 being the most damage and 0 no damage. The numbers on the x-axis indicate the range in meters of the chosen gun, with LG standing for long guns and C standing for carronades.

If you decide to fire, you will be given the option to either target the hull or the masts, and your guns will fire with the number of hits indicated subsequently. Then the opposing ship will fire if possible and the number of hits on your ship will be indicated.

Once firing is completed, you will be given the opportunity to change the type of ammunition loaded in each gun section. If you decide to do that, then you will be prompted to enter a new type of ammunition for each section by typing in its 2 letter designation (RS, DS, GP, DG, DM) and pressing ENTER. If you do not wish to change the load of a particular section, then simply press ENTER to keep the current loadout. *Remember however that when you change the load of a gun section, then the reloading percentage of that section goes to zero and will increase gradually depending on the factors discussed previously.* Your computer opponent will then make decisions about its gun loading.

At that stage, if one of the ships is grappled, then you will be asked whether you would like to board the enemy ship. The main objective of boarding is to

eliminate as many deck crews as possible, thus reducing the opposing ship's morale as well as ability to maneuver. *Please note that only deck crews are affected by boarding, and the other crew are not involved nor do they suffer casualties.* This action can quickly force the enemy to strike its colors, but can also lead to significant casualties on your side as well, so use it carefully. The main predictors of boarding success are your crew morale and quality, and they should preferably be better than your opponent, although you can sometimes get away with boarding action using an inferior crew complement if you have a large amount of available crew and thus can take a fair amount of punishment while imposing losses on your opponent. Even if you decide not to board, the computer may decide to board you as long as the ships remain grappled. After each boarding action, the number of casualties on each side will be displayed:
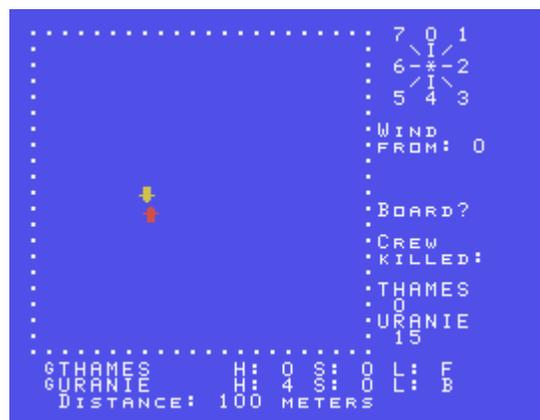


Boarding action is also augmented by fire from the "tops", i.e. from crew posted on the masts who snipe at the opposing crew and contribute to the casualty numbers.

Immediately after firing and or boarding, the computer will assess whether either ship will strike its colors depending on crew morale or ship damage. If morale drops below 50, then there is a chance that the ship will strike its colors. Similarly, if the number of remaining deck crew is less than 30 or the hull strength is less than 30 or the mast damage is 100%, then the affected ship will automatically strike its colors and the game will end. You will have the option at that point to play another game or quit.

**Ship Status and Crew Management Phase**

In this phase, you will be able to review your ship's current status and to make adjustments to your crew distribution:



Hull strength indicates the remaining structural integrity of your hull following gun damage. The port and starboard fire powers indicate the effective gun strength on each respective side. If the fire power on a specific side goes to zero, then you will no longer have the ability to fire from that side. Mast damage is expressed as a percentage, and your maneuvering ability and speed will be reduced proportionately to the amount of incurred mast damage. Crew morale starts off at 100 and decreases as the ship and crew take damage. Crew casualties tend to have the greatest effect on crew morale, while gun damage has the least effect. At first you will likely not see much of a change in morale, however as you accumulate damage then the decline will accelerate. Finally, the total crew number indicates how many available crew you have left on the ship.

The crew of a particular ship is usually distributed between 4 different ship sections:

- Decks (Deck)
- Port guns (P-Guns)
- Starboard guns (S-Guns)
- Tops (Tops)

The status display will show you the **actual (A:)** crew distribution under each section and the **recommended (R:)** one as calculated by the computer based on your ship size and the number of effective guns still available. This recommendation is an estimate and you are not bound to follow it. At that point, you will be asked if you would like to adjust the crew distribution. If you answer Y, then you may select the *From* and *To* sections as well as the number of desired crew to transfer, and the adjustments will then be reflected on the status screen. You may repeat this process as many times as you see fit.

Once you are satisfied with your crew distribution, answer N to the crew adjustment option and you will be shown the opposing ship's status *excluding the crew detail*. Neither you nor the computer opponent will have access to the enemy's crew details in order to preserve a certain level of fog of war.

Once you have analyzed the enemy's status, press any key and you will be taken back to the **Sail Set and Helm Orders Phase** to continue the battle.