

Naval Battle

Design Concept

Welcome to Naval Battle, the ultimate game for naval supremacy.

Naval Battle is a turn-based strategy game where each player controls a fleet of ship with the objective of sinking all the opponents ships. When a player loses all his ship, he is eliminated. Last player left in the game is declared the winner.

The game itself can be divided into three phases. During the first phase, a player chooses his fleet using a point allocation system. Players are allotted a fix number of points and must spend this points purchasing/building their fleet. The more powerful the ship, the more expensive it is. The second phase requires a player to place the ships he purchased/built in the first phase on the game map. Each player will have a dedicated starting area for his ships. The turn phase his the strategy game itself, where each player alternate turn moving their ships and attacking each other.

The Game Map

A game map is a grid composed of at least 60 by 60 square-shape cells. The size of the map can vary depending on its design and the maximum number of players it supports. About 15% of the cells on the maps should contain land masses (blocking cells). The exact distribution of these landmasses is not defined (uniform distribution, bias towards the center or exterior, etc), but should be fair to all players. The maps should not make the game play repetitive. This means the maps can be partially or totally pseudo-randomly generated at the start of the game, or a large number of predefined maps are provided. Each map will have a fix number of starting zones assigned to them, each of them at at least 8 by 8 square cells large.

The Ships

During the first phase of the game, players can built their fleets using 7 different types of ships. Table 1 found at the end of this documents describes the characteristics of each ships, defining their size, speed, health, radar capabilities, weapons carried and their costs. Illustration 1 provides a concrete view of the different sizes of the ships, and defines the center of each ship. The notion of center of ship is critical, as it is used to calculate radar and weapons range, as well as define how a ship can be rotated.

- Size: Defines the number of cells a ship can occupy. Larger ships are more vulnerable to attack, since they cover more cells and are easier to hit.
- Speed: This is how much a ship can move during a given turn.
- Radar: This defines which types of radar is equipped on a given ship and how powerful they are.
- Health: This indicates how much damage can a ship take before it is sunk.

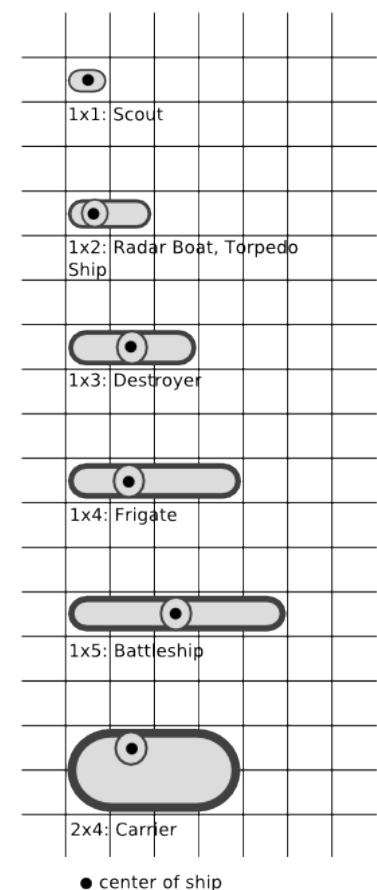


Illustration 1: Size and Center of Ships

- **Weapons:** This defines which weapon systems are equipped on a particular type of ships. Weapons are identified by a letter, which can be found, along with definitions of each weapon systems, in Table 2.
- **Cost:** This indicates how many units of resources this particular type of ship will cost during the first phase of the game.

Radar

Initially, the game map is covered by a shroud of darkness. This means players cannot see the contents of a cell, although they can see if the cell has a landmass. However, ships are equipped with radars (see Table 1) which allows players to see the content of cells around their ships. The exact number of cells a ship can see is determined by the type of radar (either cone or radius) and its range. An example can be seen on illustration 2. Note that players should be able to differentiate easily between a visible cell and a cell covered by the fog of war.

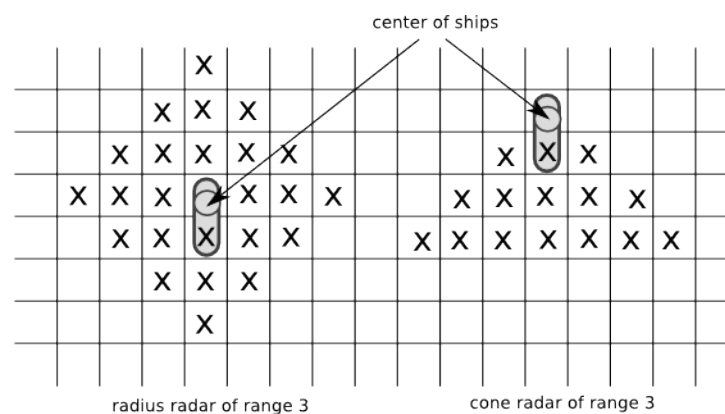


Illustration 2: Example of radius and cone radar of range 3

Weapon Systems

Each ship is equipped with a number of weapon systems (see Table 1). These weapon systems are fairly similar and are defined by several characteristics in Table 2.

- **Recharge time:** The number of time it takes for a weapon system to recharge. This represents the resources drawn by a particular weapon system. During those turn, the ship can neither move or attack (receive any orders).
- **Damage:** The amount of damage caused by the weapon. Note that any collateral damage also uses this damage value.
- **Blocked by landmass and other ships:** A particular attribute of the torpedo, which explodes if it hits a landmass or another ship while heading towards its target. This is re-explained in later section.
- **Range:** How far can the weapon target. Example values of ranges are shown in illustration 3.
- **Pattern:** This describes where damage is cause by a particular attack. The different types of patterns are explained in the following section.

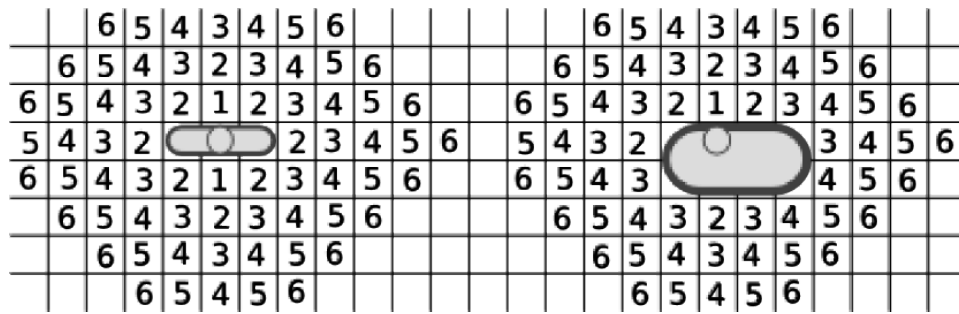


Illustration 3: Example of Weapon Ranges for Destroyer (left) and Carrier (right)

Damage Patterns

Damage can be dealt in three patterns, as shown in illustration 4. Note that a ship can be damaged more than once by a single attack, given collateral/adjacent damage.

- Spot: In a spot attack, damage is only done to the targeted cell.
- X: In an X attack, damage is done to the targeted cell and some adjacent cells, as shown in the illustration. Note that adjacent damage, also called collateral damage, can be done to the firing ship or any other allied ship.
- Row: In a row attack, in addition to regular damage dealt to the targeted cell, all cells between the center of the ship and the targeted cell receive collateral damage (same damage value). Even though the firing ship does not receive collateral damage, allied ships can.

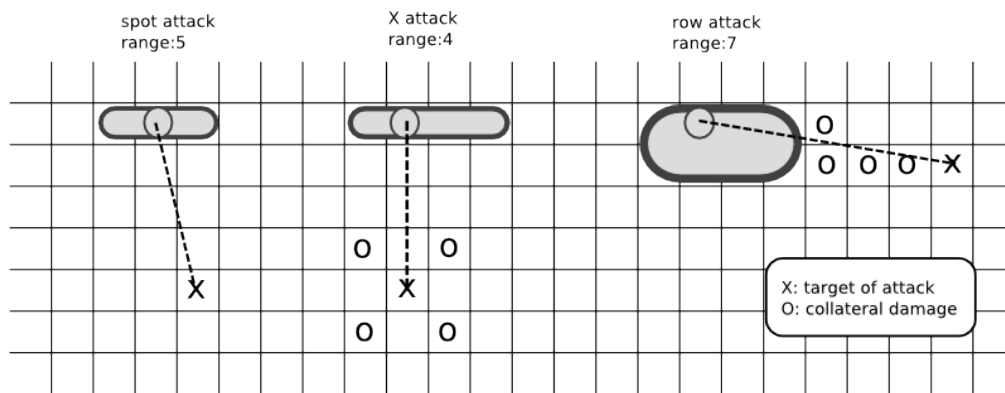


Illustration 4: Spot, X and Row Damage Patterns

Torpedo Path

The torpedo is an underwater weapon that is blocked by landmasses and other ships (enemy or allied). Although any cell in range can be targeted, a torpedo will detonate on the first solid (landmass or ship) cell it crosses.

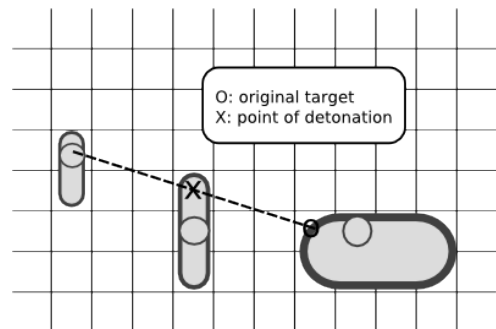


Illustration 5: Example of a Torpedo targeting a Carrier, but hitting a Destroyer first

How to Play the Game

As already mentioned, a game can be broken down to three phases:

Phase 1: Fleet Purchase

During this phase, players are allowed to purchase up to 1000 units worth of ship. A player's decision should not be final until he/she has finished all decisions and presses a confirmation button. It should be noted that players should not be able to acquire more than two ships of a given type.

Phase 2: Fleet Positioning

As previously mentioned, each player is assigned a starting zone. Players can place their purchased/built ships anywhere (any orientation, horizontal or vertical) in the starting zone. All the purchased ships must be able to fit in starting zone. Otherwise, any excess ships will be discarded.

Phase 3 : Fleet Battle

This is the main phase of the game, the fleet battle. Each player alternates playing their turns. A full turn is considered completed once every player has completed their turn. During their turn, a player can issue orders to their ships. These orders include moving and attack (thus, a ship can attack, can move, or can both move and attack, in that order). However, ships with recharging weapon systems cannot receive orders.

Moving a ship

Each ship can move a fixed number of cells. Moves are limited to the four cardinal points N,S,E,W. In other words, moving one cell NE is considered two moves. Distances of moves should be calculated from the center of each ship (see illustration 1). Players get to choose the final orientation of their ship (horizontal or vertical). The rotation of a ship should also be done from the center of the ship. Ships cannot move through or occupy spaces with landmasses or other ships.

Making an Attack

Players first decide which weapon system they want to use and then select the target cell. Attacks are resolved immediately after the order is issued. Ships with health below zero are considered sunk and are immediately removed from the map. Depending on the type of attack, the firing ship might go into recharge mode for a couple of turns.

Winning the Game

The game is considered won when only one player has ships remaining in his fleet. That player is considered the winner.

Annexe 1: Statistics

This annexe defines the different components of the game, providing exact values for various attributes. Note that some of this values might need balancing, as not to make a component of the game too powerful.

Table 1 : Ship Characteristics

Ship Type	Size	Speed	Radar	Health	Weapons	Cost
Scout	1x1	4	Cone 4	30	S	100
Radar Boat	1x2	3	Radius 5	60		150
Torpedo Ship	1x2	3	Radius 2	60	ST	150
Destroyer	1x3	2	Radius 3	90	SL	200
Frigate	1x4	2	Radius 2 Cone 2	120	SLM	250
BattleShip	1x5	1	Radius 2 Cone 2	150	SLB	300
Carrier	2x4	1	Radius 5	240	SLA	400

Table 2 : Weapon Characteristics

	Weapon Type	Recharge Time (turn)	Damag e	Blocked by landmass and other ships	Range	Pattern
S	Shell	0	30	no	5	Spot
L	Long Range Shell	1	50	no	12	Spot
T	Torpedo	1	80	yes	10	Spot
M	Mortar	2	30	no	7	X
A	AirStrike	3	50	no	7	Row
B	Shell Bombardement	3	140	no	10	Spot