

Welcome to space!

Fuel To Burn (FtB) is a retro-styled, minimalistic, pen-and-paper, diceless, near-true-scale, semi-Newtonian, "easy but complex" space opera wargame! In **FtB**, players command a handful of heavily shielded spaceships that are propelled through the dark by roaring engines, firing railguns and long-range guided torpedoes. Ships and their crews face off in the silent and immense void of space. Conserve fuel through precise timing and cunning manoeuvres around planets, manage your heat signature to retain initiative and choose your orders with care. How hard will you push the drive? When is the right time for repairs? What if the torpedo counter-measure has no effect? Will the ship overheat? *It's all up to you, commander!*



1 - What you need to play

FtB is a game designed for simplicity and availability. The only necessary items are paper (preferably an A1 but any size will get you started), pens (3 colours minimum) and a ruler marked in centimeters. You can scale up your game by using a ruler marked in inches instead and play on a whiteboard. It's even possible to play using decimeters. Some scenarios can be played solo and some as a co-op but the most thrilling games are of course played against another human. The **FtB** rules can easily be extended and modified - so go nuts! For free downloads, info, Discord link, additional rules and scenarios, join us at:

www.fueltoburn.xyz

2 - What players do in FtB

In **FtB**, players command a small fleet of **Combat Spaceships** by plotting their course through space, using the **Astrometrics** rules and deciding what **Orders** to give each turn. A **Ship** has several options, such as doing a **Burn** to changes course, **Repair** damage or bleed off **Heat**. As **Ships** close in, they must also decide if they will engage in **Combat!** Focus is always on the **Scenario Objectives** and these depend on **Ships** being in the right place at the right time. The challenge is that they carry a limited amount of **Fuel** for **Hard burns** (trapped nuclear explosions in ablative magnetic mirror systems), **Torpedoes**, **Weapons**, **Ship Systems**, **Armour** and will also struggle with **Overheating** which exposes **Ships** and affects **Initiative**. *Refueling and rearming is rare. Players must balance risks, manage assets and plan far ahead in order to reach the scenario objectives and prevent their opponent from reaching theirs!*

3 - How to play a game of FtB

- 1) First, read these rules. The words in **bold** refer to other "rule boxes" or concepts. The resolution mechanism in FtB is based on Rock-Paper-Scissors and "REs" (*Random events*).
- 2) Unless you have a pre-printed "space" map of a star system available, a piece of paper must first be prepared with the necessary **Telemetry** to depict the **Star system**.
- 3) Set up a **Scenario** to play out. There are tools for this at the end of these rules. More options and **Scenarios** are published on the **FtB** website.
- 4) **Assemble your fleet** by selecting the **Ships** you think will suit the **Objective** whilst keeping within the points limit or the rules set by a **Scenario**.
- 5) Deploy your ships on the map according to the **Scenario** and **Deployment** rules.
- 6) Run the **Turn sequence** until all possible **Objectives** have been achieved, no **Ships** remain or all **Turns** have been played. This ends the game.

4 - Ship types & Abilities

There are 4 types of **Military** ships, each with a unique **Ability**. A basic ship is equipped with: 1 **Armour**, 2 **Torpedoes** and 2 **Fuel**.
Destroyer: Stealthy and fast. +1 **Fuel**.
Ability: Stealth - The **Masking signature** test is always an automatic **Success**.
Cruiser: Eagle eyed and laden with ordnance. +1 **Torpedo** capacity.
Ability: Scanners - Can make a target **Tracked**.
Battleship: Heavily armoured and fitted with huge gun arrays. +1 **Shield**.
Ability: Focus fire - **Battleship Hits** remove 1 **Shield** and does **Damage** when **Winning** (but not for a **Draw**), even if there is another **Shield** left.
Tanker: A fleet **Tanker** represents a group of refueling vessels that can emerge at different locations during a game. A **Tanker** can **Refuel Ships Passing through** its service range. It has no **Weapons** or **Systems** of its own.

5 - Ship systems & Offline effects

- A **Damaged System** is **Offline** until **Repaired**.
- ☐ **Core:** Power distribution, computation and crew. If **Offline**, the **Ship** can't lose **Heat** by any means nor can **Abilities** be used.
 - ⊙ **Weapons:** If **Offline**, any **Hit** scored in **Combat** has no effect on the opponent and **Countermeasure** fire **Success** equals the effect of **Partial success**.
 - ⚙ **Drive:** The propulsion system. If **Offline**, a **Ship** cannot do **Evasive actions** nor perform **Burn** or **Hard burn Orders**.
 - 🛡 **Armour:** Used to negate 1 **Hit** in **Combat**. Once it is gone it can't be replaced or regained (except through special rules like **Refit**).
 - ⚡ **Fuel:** A **Hard burn**, **Evasive action**, **Heat dump** or **Tunneling** consumes **Fuel**.
 - ⚠ **Torpedoes:** Massive, propelled weapons built for use in space. Guided and lethal.
 - ⚡ **Heat:** Heat levels must be kept low or the **Ship** may lose **Initiative** or even risk **Destruction**.

6 - Ship manifests

Each **Ship** has an identification (name, letter or number) where their **Vector** starts the game, which matches that of a **Ship manifest**. This is how a **Ship's** status and its assets are tracked. Below are examples of a **Destroyer (D)**, **Cruiser (C)** and **Battleship (B)**. The **Destroyer "D3"** is an example of a **ship in play**. It has a **Damaged Drive System** (symbol is added only after **Damage** has occurred), no **Armour** left, 2 levels of **Heat**, had 1 **Torpedo** left and 2 **Fuel** (it has also **Refueled** once and **Cooled down** 1 Heat).



7 - The Telemetry concept

The paper map which **FtB** is played on (the **Star system**), consists of visual information for **Ships** and **Torpedoes** and their movement **Vectors**. In **FtB**, distances are measured in LU's "Length Units". Specific symbols are used for **Combat Engagements**, **Radiation zones** and **Asteroid fields** etc. These are all drawn on the map by the players as the game progress. This is the "Telemetry concept". Below is a small example of a ship (grey) moving in and attacking another and how this looks in practice (the grey ship scored a hit on the black one).



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Game design, text, art & layout by
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8 - Turn sequence

- A **Turn** (or **Day**) is divided into 4 **Phases**:
- 1) **Turn counter (Calendar)**
The scenario states how many **Turns** (or **Days**) to play. Write down the total number of **Turns** on a paper or the map itself. At the start of each **Turn**, write the current **Turn** number under or next to the previous then proceed to the **Initiative** phase.
 - 2) **Initiative**
Initiative is decided by **Ship** count. *First* by most **Untracked Ships**, *second* by total number of **Ships** and *third* (as tie-breaker) by using a **Combat resolution** (without the **Evasive** option and redoing any **Draw** results). **Tankers** don't count but **Civilian Ships** do. **Initiative** is decided once per **Turn**. Note in the **Calendar** who won the **Initiative**.
 - 3) **Ship activation**
a) The player with the **Initiative** selects one of their unactivated, **Untracked** ships to **Activate** OR may instead choose to force a specific unactivated **Tracked enemy Ship** to **Activate** (if there is one). Then the opponent does the same.
b) Once out of **Untracked** ships to **Activate**, a player must forego their turn and wait for their opponent to force **Activation** on one of their **Unactivated** Ships.
c) When both players are out of **Untracked** ships, the player with the **Initiative** chooses who will force an enemy ship to **Activate**, until there are no **Unactivated** ships left and the **Ship activation Phase** ends.
 - 4) **Administration**
a) After all **Ships** have been **Activated**, check for fulfilled **Win conditions**. If the **Scenario Objectives** are fulfilled, or it was the last **Turn**, the game ends.
b) If the game continues, update all relevant **Vectors** as completed (add the **Activated** symbol on all current vectors).
c) A new **Turn** (**Day**) starts.

11 - Ship activity steps

- When a **Ship** is being **Activated** (regardless of whether it is **Tracked** or not), it is no longer **Passive** and will do the following 5 **Steps** in sequence:
- 1) **Guide Torpedo:** Any **Torpedo** guided by the **Ship** now **Activates**. It will **Coast** every turn and may **Attack** during its move. Note: If it is within 30 LU from the **Guiding Ship** at this point, it can be guided. If not, it is **Deactivated**.
 - 2) **Orders:** The ship can be given 1 **Order**.
 - 3) **Vector plot:** The ship's new **Vector end point** is plotted (see **Astrometrics**).
 - 4) **Vector actions:** Follow the **Vector** and resolve **Attacks**, complete **Refueling** and apply area effects (**Radiation** and **Asteroids**) in the order they happen, as the **Vector** is drawn.
 - 5) **Masking signature:** If the **Ship** is **Tracked** (for any reason) but not currently **Overheated**, the ship can try to **Mask signature**. This is an **easy RE Test**. If the test **Succeeds**, the current **Vector point** is cleared of the **Tracked** symbol.

12 - Orders

- Only 1 **Order** can be given to a **Ship** each **Activation**. If no choice is made for a **Ship** (or it is forgotten), it will default to a **Coast Order** and move with the same velocity and in the same direction as last turn. Note that all **Heat** reduction requires a working **Core**.
- Coast:** The **Ship** is idle and will **Cool down** if there is **Heat** to get rid of. Remove 1 **Heat** at the end of the **Vector action Step**. This **Order** can always be chosen, regardless of **Heat** levels.
 - Burn: Acceleration.** A small **Vector change** of 3 LU. This option is always available unless the **Drive System** is **Offline**. Adds 1 **Heat**.
 - Hard burn: Acceleration.** A large **Vector change** of 7 LU. Consumes 1 **Fuel**. If there's no **Fuel** left or **Drive System** is **Offline**, this **Order** cannot be chosen. Not allowed within 2 LU of a **Planet** or **Station**. Adds 1 **Heat**.
 - Heat dump:** A desperate action to reduce **Heat** is to dump accumulated heat into ablative shielding and dump it overboard. 1 **Fuel** is lost but **Heat** levels are set to 0 regardless of the amount of **Heat** the **Ship** had to begin with. This is done at the end of the **Vector action Step**.
 - Repair system:** Orders the crew to attempt to repair the **Damaged System** with a **RE test**. Check the outcome immediately in the **Order Step**. A **Repaired** system is no longer **Offline** and is crossed over in the **Ship manifest**.
 - ★ **Success:** Repairs the **System**.
 - ★ **Partial success:** **Success** but also adds 1 **Heat**.
 - ★ **Failure:** No effect (stays **Damaged**).
 - Launch Torpedo:** The **Ship** launches 1 **Torpedo** if it has any available and not already guiding one, otherwise this **Order** cannot be chosen. **Heat** levels remain the same.
 - Special order:** Other **Orders** as described in the rules (like **Refit**) or in a **Scenario**, which can define any number of such **Orders**. Example: a **Scenario** can state that whilst **Docked** at a **Station**, a **Boarding Special order** can be used to reach a specific **Objective**, unique to that **Scenario**.

9 - Tracked ships

- There are 2 ways a **Ship** can become **Tracked**: being **Scanned** or becoming **Overheated**.
- 1) **Tracked through Scanning**
A **Ship** can only ever be **Scanned** whilst being **Passive** since another **Ship** (a **Cruiser**) must be **Active** to perform the **Scan**.
If the **Scan** is successful, the **Ship** becomes **Tracked** and its current **Vector end point** is marked with the **Tracked** symbol (see **Telemetry**).
 - 2) **Tracked through Overheating**
Overheating happens immediately when 3 **Heat** is reached, both during a **Ship's** own **Activation** or whilst being **Passive** (i.e. another ship is **Active**). It becomes **Tracked** and that **Ship's** current **Vector end point** is marked with the **Tracked** symbol (see **Telemetry**).
If an **Active Ship** reduces its **Heat** levels below 3, it can attempt to **Mask signature** in the same **Activation**.

10 - Scanning

- ★ The **Cruiser** is the only ship able to **Scan**.
- ★ The **Scan** is performed at the **Vector end point**, before the **Masking signature** step.
- ★ The **Scan range** is 15 LU.
- ★ A single enemy ship within **Scan range** can be selected as a target.
- ★ If the **Core system** of the **Cruiser** is **Damaged**, it cannot perform a **Scan**.
- ★ A **Scan** is done with an **easy RE test**. **Failure** results in the **Cruiser** gaining 1 **Heat** and the target not becoming **Tracked**.
- ★ There is no difference between a **Tracked status** coming from **Overheating** or being **Scanned**. It is treated the same way in the **Mask Signature** step. This means that a ship that got **Untracked** this turn risks becoming **Tracked** again (from either **Overheating** or being **Scanned**).

13 - Random events

- Random events (**RE**) are decided using the same system as for **Combat** (without **Evasive**). If cards are used instead, pick one randomly. The suite symbols can be used as shown below and the **Combat cards** clearly state the outcome. **Evasive** is only included if a **Scenario** specifies its use.
- ♠ ♣ **Win: Success!** The action is performed or a negative event was avoided.
 - ♠ ♦ **Draw: Partial success.** It didn't go quite as well (or bad!) as it could have.
 - ♠ ♠ **Loose: Failure!** The action fails and there may be severe consequences.
- When any rule calls for a "RE test", the player resolves a **Random event**. Each such rule will clearly state what the outcomes from the three possible results are. If the rule calls for an "easy test" or "easy RE test", a **Partial success (Draw)** will count as a **Success!**

14 - Range, Attacks & Cover fire

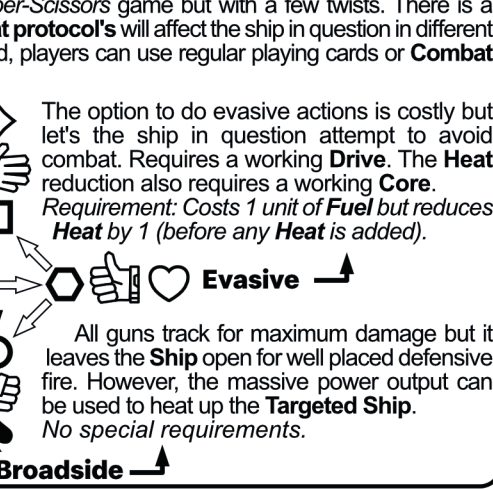
- ★ **Ship** weapons has a **Range** of 3 LU and **Torpedoes** has a **Range** of 6 LU for **Attacks**.
- ★ **Enemy Ships** within **Range** from the **Active Ship's/Torpedo's Vector** are **Potential Targets**.
- ★ The **Attack** is made from 1 selected **Attack point** anywhere along the **Attacker's Vector**.
- ★ An **Attack** can only have 1 **Target**.
- ★ If an **Active Ship** don't **Attack** the first available **Target(s)**, none at all, or if there are additional **Potential Targets** at a point along the **Vector** after **Combat resolution**; the opponent may **Attack by Cover fire** from 1 of those **Ships** (in order along the **Vector**). If so, neither **Ship** may take **Evasive actions** in that **Combat**.
- ★ **Ships** can't **Attack Torpedoes**. A **Torpedo** will automatically **Attack a Ship** placing its **Vector end point** within 3 LU. This **Attack** is **Resolved** right away. If multiple **Torpedoes Attacks, Resolve** these in the order decided by the controlling player.

16 - Combat resolution

Instead of dice, players use the common **Rock-Paper-Scissors** game but with a few twists. There is a fourth alternative (**Bomb**) and each of the four **Combat protocols** will affect the ship in question in different ways. Instead of doing **Rock-Paper-Scissors** by hand, players can use regular playing cards or **Combat cards** printed from the website.

Defensive fire is prioritized, preventing the opposing ship from reaching an effective attack vector. However, it can't stop a well placed railgun round from hitting its target. *No special requirements.*

Railgun shots are very difficult to avoid but an overwhelming amount of focused fire can make it next to impossible to fire effectively. *Requirement: Adds 1 unit of Heat to the Attacking Ship.*



Defensive ⬆️
The option to do evasive actions is costly but let's the ship in question attempt to avoid combat. Requires a working **Drive**. The **Heat** reduction also requires a working **Core**. *Requirement: Costs 1 unit of Fuel but reduces Heat by 1 (before any Heat is added).*

Railgun ♣️
All guns track for maximum damage but it leaves the **Ship** open for well placed defensive fire. However, the massive power output can be used to heat up the **Targeted Ship**. *No special requirements.*

Evasive ⬆️
All guns track for maximum damage but it leaves the **Ship** open for well placed defensive fire. However, the massive power output can be used to heat up the **Targeted Ship**. *No special requirements.*

Broadside ⬆️

17 - Combat effects

- Whenever **Combat** is **Won**, or is a **Draw** (in which case both players win), these steps apply:
- a) The opposing **Ship** is **Hit** and loses a **Shield**.
 - b) If there's no **Shield** it suffers **System Damage**.
 - c) If the **Ship** already has a **Damaged system** (even if Repaired), it will be **Destroyed** and removed from play (and marked as **Destroyed**).
- Combat protocol** dependent effects:
- ★ **Winner was Defensive:** **Target's** choice of **Damage**. If the **Target** has a **Shield**, they may convert the **Hit** to 2 **Heat** instead.
 - ★ **Winner fired Railgun:** **Winner's** choice of **Damage**, unless the **Target** took **Evasive actions**, then it's the **Target's** choice.
 - ★ **Winner fired Broadside:** **Target's** choice, or winner may add 1 **Heat** to targeted **Ship** instead of the **Hit**.
 - ★ **Winner did Evasive actions:** No **Combat effect** on opponent, no **Damage** or loss of **Shield**.

19 - Torpedo attacks

- When a **Torpedo Attacks** (automatically or not), the **Targeted Ship** will fire **Countermeasures**. This is a **RE test** (for the **Ship**, not the **Torpedo**):
- ★ **Success:** The attacking **Torpedo** is **Defeated** and removed from play. No effect on the **Target**. If **Weapons** are **Offline**, this result becomes a **Partial success**.
 - ★ **Partial success:** The attacking **Torpedo Hits** the **Target** but the **Target** chooses **System damage**, unless there are **Shields**, then a **Shield** is removed and the **Attack** ends.
 - ★ **Failure:** The **Torpedo Hits** the **Target** and the **Torpedo** player chooses **System damage**, regardless of **Shield** status.
- The **Targeted Ship** can, before the test, do **Evasive actions** for 1 **Fuel** (unless the **Drive** is **Damaged**). It removes 1 **Heat** (unless the **Core** is **Damaged**) and the **Countermeasure** test becomes an **easy RE test**, increasing the **Ship's** chance to survive.

18 - Damage effects & Destruction

- Whenever a **System damage** is inflicted, the corresponding **System symbol** is added to the **Ship's Manifest**. That **System** is **Offline**. Once **Repaired**, the symbol is crossed over once and that **System** becomes available again.
- The moment a **Ship** reaches 5 **Heat** levels, the **Ship** is instantly **Destroyed** due to **Meltdown** and crew death.
- Attacks** may cause **Splash damage** due to massive radiation bursts. **Ships** that are **Hit**, i.e. loses a **Shield** or takes **System damage**, will inflict 1 **Heat** on any other ship within 1 LU.
- A **Ship Destroyed** in **Combat** or by **Meltdown** will, in addition to **Splash damage**, also inflict a **Hit** on any other ship within 1 LU after the **Splash damage Heat** has been added. The "targets" will decide which **System** is **Damaged** and **Offline**, if any. This can lead to a nasty chain reaction so keep your distance!

20 - Torpedo vs. Torpedo Combat

- Only an **Active Torpedo** can **Attack** another **Torpedo**. It uses the same procedure as when **Attacking a Ship** but then follows the steps below.
- The attacking player's **Torpedo** is **Detonated** (removed from play). That player then makes an **easy RE test** to see what happens with the enemy **Torpedo**, as if the guiding **Ship** was firing **Countermeasures**.
- ★ **Success:** The targeted **Torpedo** is **Defeated** and removed from play.
 - ★ **Failure:** The blast is ineffective and the targeted **Torpedo** is left in play.
- Torpedoes** has no proximity protocol for other **Torpedoes** and will not automatically **Attack**. They have to do an **Active Attack** to engage one another, or they will just pass each other by. There's no **Splash damage** effects from these pin-point attacks.

21 - Tankers

- ★ **Tankers can Refuel Ships.**
- ★ Unless a **Scenario** says otherwise, **Tankers** start hidden and not on the map.
- ★ Instead of a player **Activating** one of their **Untracked** ships, they can decide to deploy 1 **Tanker**. This means that if there are no **Untracked** ships, the player can't deploy it.
- ★ Once deployed, note the day of deployment next to the **Tanker Symbol**. A **Tanker** will remain on station for 5 **Turns** (Days). I.e. if deployed on the 5th day, it will be removed at the start of the 10th. Cross over the symbol.
- ★ After having been removed, a **Tanker** must resupply and cannot be deployed for 5 days.
- ★ **Tankers** aren't **Attacked** in the usual way. Once 3 **Attacks** have been **declared** against it (including **Torpedo Attacks** or **Splash damage**), it will be removed but can be deployed again after resupplying.

22 - Refueling

- ★ Any friendly **Ship Passing through** within 2 LU of a **Tanker** may **Refuel** once per **Activation**.
- ★ A **Tanker** cannot **Refuel** more than 2 **Fuel per Turn** (Day).
- ★ A **Ship** cannot have more **Fuel** than its maximum capacity and cannot receive more than 1 **Fuel per Turn** (Day).
- ★ **Ships** that are in **Orbit** or **Docked** can not be **Refueled** by **Tankers**.
- ★ The **Refueling** action is instantaneous during the **Vector action Step** (when the **Ship** comes within range). Update the **Manifest** accordingly before moving on.
- ★ Note that **Refueling** is completed before applying effects from **Radiation zones** or **Asteroid fields**, if they could be applied at the same time (this is a rare case since effects should be applied as they are encountered).

23 - Radiation zones & Asteroid fields

- Space is a dangerous place. There are areas with intense radiation and others with more rocks than is healthy when travelling with a high relative speed.
- A **Ship Passing through** either of these types of areas (also after **Deflection**) will be affected **each Turn, during Vector activation** (when encountered). **Torpedoes** are **Destroyed** by **Radiation** unless it is **Attacking**, but are unaffected by **Asteroids**.
- Radiation effect:** A **Ship** gains 2 **Heat**.
- Asteroid effect:** The **Ship** must do a **RE test**. If the **Ship** has a **Vector** of 5-12 LU, it's an **easy RE test**. At 1-4 LU it's an automatic **Success**.
- ★ **Success:** No effect on the **Ship**.
 - ★ **Partial success:** The **Ship** gains 1 **Heat**.
 - ★ **Failure:** The **Ship** is **Hit**. Choose **System damage** unless a **Shield** can take the blow instead, as per the **Combat** rules.

24 - Liners & Runners L1 R1

- Civilian** type **Ships** do not have any **Weapons** and cannot **Attack**. Resolve **Combat** as usual but without effect on the opposing **Ship**. Any **Damage** can only affect the **Drive** or **Core**.
- Liners** are lumbering **freighters**. **Burn** is 2 LU, **Hard burn** is 5 LU. **Ability:** **Repairs** of the **Drive** is always a **Success** unless the **Core** is **Offline**.
- Runners** are fast **couriers** for priority goods and travel. **Ability:** **Burn Acceleration** is 4 LU and does not add **Heat**.
- When a **Civilian** ship is controlled by a player, it will be **Activated** as one of their ships (including **Refueling**) and must manage **Heat** as usual but they **Overheat** at 2 **Heat**.
- When **Neutral**, **Civilian Ships** are governed by script or events as defined by a **Scenario**. They are usually **Activated** before any other **Ships**, regardless of **Tracking** status.

25 - Stations, Blockades & Refits

- Stations** are immense shielded habitats used for zero gravity production, energy harvesting, scientific research and ship maintenance. **Objectives** often revolve around them.
- Stations** (and **Planets**) can be **Friendly**, **Hostile** or **Neutral**. If a **Ship Docks** with any **Station** (or enters the **Orbit** of a **Neutral Planet**), it will start a **Blockade** (see **Orbiting & Docking**). **Neutral** objects should be drawn in black or green. **Scenarios** can use **Blockades** as **Objectives**.
- Station set-up:** The locations of **Stations** in a **Star system** can be defined by a **Scenario**, a pre-printed map or by alternate player placement during system set-up.
- ★ Each player has 3 **Stations** for a 50 **Point Game**, 4 at 75 and 5 at 100 for an entire **Star system** (reduce for smaller maps).
 - ★ Decide by a **RE** who places the first **Station**.
 - ★ 1 **Station** must be placed within 20 LU of the **Home planet**, the others within 40 LUs of at least one friendly **Station**. None of them may be placed within 10 LU of another object.
 - ★ 1 **Station** in 4 must be placed within the **Asteroid field** (or at least 35 LU from the star).
- Refits:** A **Ship** can **Dock** at a friendly **Station** and request a **Refit** as a **Special order**. This takes 3 full **Turns** (counting from the **Turn** of the **Special Order**). In the **Administration Phase** of the 3rd **Turn**, the **Ship** will remove all **Heat** and may choose between the following:
- ★ Remove the **Damage** it has suffered, but it **must be Repaired** before the **Refit** order.
 - ★ Refuel to maximum **Fuel** capacity.
 - ★ Replace 1 **Shield** (not 2 for **Battleships**).
 - ★ Reload up to 2 **Torpedoes** (within max capacity).
- If the station is **Blocked** during these 3 **Turns**, the process is paused until the **Blockade** is lifted. A **Station** can do one **Refit** per game, then their resources are spent (note this on the map).

26 - Telemetry symbols

- **Ship Vector** with start and end point.
- **Hit on Ship** - 1 Ring / Hit (**Active** or **Cover firing** player's colour).
- ☀ **Ship Destroyed** - "Beams" (**Active** or **Cover firing** player's colour).
- ◇ **Diamond marks Ship as Tracked**.
- **Torpedo** - Each **Vector line** ends with a small circle. Cross over if **Detonated/Destroyed**.
- **Attack** - Dashed line drawn to **Target** (attacker's colour) / Dash-dash-dot line for **Cover fire**.
- ~ **Torpedo Attack** - Wavy line to target.
- **Vectors** - Marked as **Activated** with a short parallel line (or crossed).
- △ **Radiation zones** - Shown with a circle (or a wavy line) with triangles pointing into the zone.
- ⚡ **Asteroid fields** - Limited by a zig-zag line and triangles pointing inwards.
- **Stars** - Dots with dotted or dashed concentric circles. Size: *Giant, Average, Dwarf*.
- ☉ **Planets** - Dots in the center with additions for *Gas giants, Atmospheric planets and Planetoids* (no atmosphere).
- ⚡ **Stations** - Circles with 4 legs **Facilities** or **Point of Interest (PoI)** - A diamond with 2 legs.
- **Influence** - Lines showing the radial distance of **Gravity** (the extra mark is for **Radiation** range).
- **Space lane** - *Transfer*: 3 marks that form a "road" to stay on. *Tunneling*: Only 1 mark combined with **Star** center point.

27 - Star system setup

- FtB** focuses on inner systems due to scale and travel times. Outer planets are accessed through **Space lanes**. Smaller games can be played out on smaller pieces of paper, no need for a full map if it won't be used (or split up a larger map for smaller games). Visit the website for more exact pre-drawn versions and detailed examples of other star systems.
- Data table for Sol**
- | BODY | DIST. | INFL. |
|-----------|-------|-------|
| ☉ Sol | - | 5/2* |
| • Mercury | 6 | 2 |
| ● Venus | 11 | 3 |
| ● Earth | 15 | 3 |
| • Mars | 23 | 2 |
| √ Belt | 33-48 | - |
- Distances are in Length Units*
* *Sol Radiation zone radius*
- Exact placement of planets is not important, but online tools can be used to extract the planets' locations at any "date".
- In the example below, the **Ship** exits the **Tunnel** from **Proxim** (A) with **Velocity** 10, coasts to **Earth** (within 1 LU) where it **Deflects** as **Slow** (B). The **Vector** (C) is the result of a **Burn** from temporary point (D) to (E). At this point, the **Ship** elects to do a **Hard burn** with **Velocity** radius (G), to be able to adjust the **Vector** from (F) to (H), enter the **Lane** and aim for the transit mark for **Saturn** (J) with **Velocity** 20 (minimum for an inter-system **Transfer** is 6). **Scenarios** can place **Space lane** marks quite freely as well as vary them in size.
- The order of **PoD's** reached must be respected. A **Ship** can be **Deflected** several times in one **Turn** but only once per **Influence**.

28 - Astrometrics

- The method of **Plotting** a course, or **Vector**, is a simplified way of doing a vector diagram to find the **Vector end point** (VEP).
- 1) A **Temporary VEP** can be found by adding the last **Vector** (X in the diagram below) to the **Current end point** (same direction and length of the **Vector** measured in whole LUs).
 - 2) A **Ship** (or **Torpedo** being launched) can then move their **Final VEP** to a point within the **Acceleration** radius of the **Temporary VEP**. The **Acceleration** radius is in LUs, equal to a **Burn** or **Hard burn**. The final **Vector** (Y) **must** always be in whole LUs.
- ★ Length Units (LU) are measured in **whole units only** (i.e. whole centimeters, inches, etc.).
- ★ **Passing through** means that a **Ship's Vector** intersects a zone or area marked on the map or defined by a radius from a center point (in LUs).
- ★ If a **Vector end point** is placed so that the resulting **Vector** passes straight through a gravity well (or it is ambiguous), the player must choose a side on which to pass.
- ★ All objects must maintain a minimum safe distance. A **Ship** or **Torpedo** may not place its **Vector end point** (VEP) directly on another VEP. Back off a bit and write down the actual velocity.
- ★ A **Ship** (and **Torpedoes**) must always have at least 1 Length Unit of **Velocity** (unless the **Ship** is **Docked** or in **Orbit**).
- ★ Only 1 **Deflection** is made for each **gravity well** that is **Passed through**. Should the next **Vector** be wholly within the **Gravity influence**, the **Ship** or **Torpedo** crashes and are removed (**Ships** can enter **Orbit**, see **Orbiting & Docking**).

29 - Orbiting & Docking

- If a **Ship Plots** a **Vector** that **Passes through** the 1 LU radius of a **Planet** or **Station**, they can enter **Orbit** or **Dock**. This requires:
- 1) the player to **Declare** their intention to enter **Orbit** or **Dock** before performing a **Burn** or **Hard burn Order** (Step 2 of **Activating a ship**).
 - 2) that the **Ship**, after the **Plot** is done, has a **Velocity** (i.e. a **Vector** length) of 3 LU or less. Otherwise the **Ship** will continue along the plotted **Vector** as usual.
 - 3) the final **Vector** to be drawn to the **Planet** or **Station** instead of the calculated **Vector end point**. Add the current **Turn** number to that **Vector**. The ship counts as **Tracked** until leaving (automatically **Untracked**). At that time, add the current **Turn** (Day) to the departing **Vector** (example below).
- ★ **Orbiting Hostile Planets** is not possible unless stated in a **Scenario**, due to defensive platforms. That would **Destroy** the **Ship**. Same for going into **Orbit** around the **Star** (radiation).
 - ★ Being in **Orbit** or **Docked** to a **Station** is **the only time a Ship** is allowed to have 0 **Velocity**; they become **Stationary**. Such **Ships** are very vulnerable. They cannot **Attack**, use **Evasive actions** or **Cover fire** and any **Damage** is always the **Attacker's** choice!
 - ★ **Torpedoes** can't be fired into or out of **Orbits** or **Stations** and **Stationary Ships** can't initiate **Attacks**. However, **no hostile Ships** may also enter **Orbit** or **Dock** when it is already occupied (see **Blockades**). They must do fly-by **Attacks**, and the **Blocking** player get to pick which **Ship** is targeted if several are present.
 - ★ Note that it is possible to have several **Ships** in **Orbit** or **Docked** at the same time, but these will count as within range of **Splash damage!**

30 - Gravity influence & Deflection

- Any **Ship** or **Torpedo** (object) **Passing through** an area of **Gravitational influence** must **Deflect** their **Vector** (this is a part of the **Vector plot Step**). Any **Acceleration** from a **Burn** or **Hard burn** this **Turn** is **added before** the **Deflection** is done.
- If the **Vector** length (velocity, in LU) of the object is:
- ★ **≥ 3 x Gravitational influence**, the object is **Fast** and **Deflects less**.
 - ★ **< 3 x Gravitational influence**, the object is **Slow** and **Deflects more**.
- You can find the maximum and minimum **Deflection angle** using a 3x3 grid diagram.
- An object **Passing through** a gravity well at 1 LU or less, always count as **Slow**.
- The **Point of deflection** (PoD) is at the shortest distance between the **Vector** and the gravity well itself (the planet or star), which is **always at a right angle** between them.
- The length of the **Deflected Vector** is equal to the number of LUs counted from the one intersecting with the **PoD**, to the **Temporary VEP**.
- This may lead to a temporary change in velocity but in the next **Plot** of the object, the original **Vector length** is used to **Plot** the next **Vector end point**. The **Velocity** may need to be recorded as a reminder, but it is always equal to the length of the **Deflected Vector** + the number of whole LUs before the **Point of deflection**.

31 - Space lanes & Stellar tunneling

- Space lanes** allow **Ships** to travel to other, more distant parts of a **Star system (Transfer)** or to other **Stars (Stellar tunnelling)**. A **Ship** travels through a **Space lane** by aligning its **Vector** through the **marks**.
- For **Stellar tunneling**, minimum **Velocity** is 10 LU. It costs 1 **Fuel** to activate the tunnelling when passing the **mark** (it does not add **Heat**). The **Ship's Vector** direction must pass within 1 LU of the **Star**. **Ships** are always removed / added on the **Star's Radiation** radius (with a ◀ symbol). When exiting, the **Star**, **Velocity** is always 10 LU measured from **Star** center.
- For **Transfer**, the **Ship** minimum **Velocity** is 6 LU. **Ships** are always removed / added on the 3rd mark. To begin or exit a **Transfer**, the **Ship's Vector** (direction) must pass all 3 marks. This **Stellar map** shows the relative angles of the lanes at each star. Grey planets are outside the inner system. White numbers are **Turns** (Days) lost in "tunnel space". "?" indicate unsafe, less well known tunnels. **Ships** using unsafe tunnels must **RE test** when exiting.
- ★ **Success:** No effect. The **Ship** arrives.
 - ★ **Partial success:** The **Ship** is delayed, but arrives the **next Turn**.
 - ★ **Failure:** The **Ship** is **Destroyed** en-route.

32 - Setting up a scenario

- Playing a **Game of FtB** usually requires a **prepared Scenario** but you can generate a **generic Scenario** following the steps below:
- 1) There has to be a map to play on. Prepare it as described in **Star system set-up** and **Stations, Blockades & Refits**.
 - 2) Decide whether or not the game will include any special rules, such as the examples in **Alternative rules & Additions**.
 - 3) Decide on the **Game** length between 12-20 **Turns** (or fewer, 6-8, for a quick encounter).
 - 4) Select suitable **Objectives** or make up your own.
 - 5) Secretly select which **Ships** to include in your fleet (see **Assemble the fleet**).
 - 6) Place **Ships** (see **Deployment**) and start the **Turn sequence**.
- Note: some Objectives may become too challenging or too easy depending on Fleet size or playing too few or too many Turns.*

33 - Alternative rules & Additions

- FtB** encourages rules experimentation and can easily be modified. Here are just a few examples:
- ★ **Hidden manifests:** Through mutual trust or with the help of a 3rd party game master, **Manifests** are treated as **Secret**. In a **Scenario**, events such as **Blockades** could provide **Intelligence reports** on **Ships** and their status.
 - ★ **Shield recharge:** Either as a separate **Special order** that costs 1 **Fuel** or by using the **Repair Order**, ships can regain lost **Shields**. Maybe for a lone alien intruder?
 - ★ **Stealth run:** 1 **Ship/50 pts** can be held back from deployment and instead have a freely placed **Deployment point** and a starting **Vector** of 4-6 LU in any direction. This point is placed after all other units are deployed, 10 LU away from all objects. **Ships** on a **Stealth run** counts as **Untracked** and must **Activate** to arrive in **Turn** (Day) 4-8, or not at all.

34 - Objectives

- A **Scenario** can use variants of these **Objectives** or completely different ones. For 50 pt games and a quick start, choose one of these for **one** side. At 75 pts, select the same **Objective** for **both** sides. For more dynamic games at 100 pts, choose different **Objectives** and/or multiple **Objectives** for both sides. The symbols shown below can be used to randomly decide, as with **RE's**.
- ♣ **Blockade**
The opponent selects one of their **Stations**. To complete the **Objective**, the player must **a)** blockade that **Station** for 1 out of 4 turns of the game (rounded up) and **b)** end the game (last turn) with the **Blockade** in action.
 - ◇ **Transport**
The opponent selects one of the player's **Stations**. A **Civilian** ship will depart from the player's **Home planet** for the chosen **Station**. If playing 14 days or less, the **Civilian ship** is a **Runner**, otherwise it's a **Liner**. The player striving for this objective may choose on which **Turn** (Day) this ship departs.
 - ♠ **Patrol**
A **Patrol** is composed of 3 destinations that a **Ship** must **Pass through** in the given order. The 1st destination is the patrolling player's **Home planet** (choose any) and the two other are **Stations**. The first **Station** (the 2nd destination) must be a **hostile Station** chosen by the patrolling player, the second **Station** (the 3rd destination) is one of that player's **friendly Stations** chosen by the opponent. To complete the **Patrol Objective**, it must end with a **Ship** returning to the home planet, completing the circuit. The **Patrol** must go around the **Star**. Each part of the **Patrol** may be done by different ships but must be completed in order. **Ships** much state "on patrol" when plotting the starting **Vector** (Passes through the destination) and may not be **Tracked** at this point in time (or they can not go on **Patrol**).

35 - Assemble the fleet

- In most cases, a **Scenario** will restrict the number and types of **Ships** and **Extras** available. A simple way of building a **Fleet** is to use "requisition priority", or just **Points** for short. The **Points** cost for **Ships** listed below will result in **Fleets** of 2-8 units depending on game sizes of 50, 75 or 100.
- Destroyer:** 12 pts **Cruiser:** 18 pts
Battleship: 26 pts **Tanker:** 7 pts
- "Extras" are small points fillers. Max 1 per player can be selected. These **can be used on any ship** when it is **Activated** but **only once**.
- Engineering bay:** 4 pts - When attempting a **Repair**, the **Order** succeeds automatically.
- Overdrive module:** 2 pts - A single **Burn** gives 5 LU of **Acceleration**.
- Tracking probes:** 3 pts - Use these probes before the **Attack** to be able to target 2 different **Potential targets**. **Resolve** each **Combat** in turn. The opponent may still only do 1 round of **Cover fire**.

36 - Deployment

- There are many ways of handling **Deployment** of **Ships**. Below is a simple way of managing this part of the **Scenario** set-up. Look to the **FtB** website for more alternatives.
- ★ Decide by a **RE** who places the first **Ship**, then take turns (a player with **Ships** left to place will place all of them at the end). If a player has more **Ships** than their opponent to place, they must start (no **RE**).
 - ★ A **Ship** can be placed within 5 LU of a friendly **Station** or the **Home planet** (but not **Docked** or in **Orbit**) unless the **Scenario** specifies otherwise.
 - ★ The initial **Vector** of a placed **Ship** can be drawn in any direction and have a **Velocity** of up to 5 LU.
 - ★ No **Torpedo** may start the **Game** on the map unless it is explicitly stated in the **Scenario**.