Designing Ships in Galac-Tac
By Davin Church

This is the second in a series of articles about Galac-Tac, a classic PBM game of galactic conquest that has been around since 1982. We've recently updated it to a "play by web" format, and last month I offered an introduction to the game. This article is going into more technical depth about one of the great features of Galac-Tac: the ability to design custom ships to accomplish your own personal goals in the game.

When you start in a new game of Galac-Tac, you begin at Technological Level 1 (called Tech Level or TL) with a handful of pre-designed ship types and several ships that have been built using some of those designs. However, you may soon notice that most of those designs can be improved upon in one way or another, and you can probably think of several new types of ships that you'd like to play with. Let's explore how you'd go about doing that.

Ship Components

Ships are designed by combining various types and quantities of weapons, engines, and other ship components into a workable whole – comprising a blueprint of sorts. Each design will also have a size and a cost that is calculated from the design. These factors will determine how time-consuming and expensive it is to construct ships of that design and how well they can perform the tasks you set for them. Let's begin by examining the different types of ship components.

Weapons

There are three different types of weapons in Galac-Tac, each with different strengths and weaknesses.

The most flexible type of weapon for general use is called a P-Type (an energy projection device, like a phaser, plasma gun, etc.). This fires an energy bolt and can continue firing throughout a combat without running out of power. It can fire either offensively or occasionally as defensive cover.

The second type of weapon is called a Drone. These are tiny robotically-controlled fighter craft, something resembling a P-Type weapon mounted on its own miniature engine. During combat they are launched from their bays automatically and controlled by the owning ship. They do the same amount of damage as a P-Type weapon, but move around much faster and more nimbly than the owning ship itself and thus have a better chance to hit in combat and less of a chance to be hit. Unfortunately, they are relatively expensive and heavy, so they are often preferred for special duties (both offensive and defensive) as a part of a large ship or combat fleet.

The third type of weapon is called a T-Type (a physical projectile device like a torpedo, trailer missile, rocket, etc.). This fires physical ammunition that travels under its own power to its target. Ammunition is stored in "missile racks" in the firing room, and this limits the amount of ammunition that can be fired during combat. Missiles must be reloaded after firing, from either the ship's cargo or from ground-based supplies. This weapon is more expensive than P-Types, and presents some minor logistic problems to keep the ship supplied with ammunition for reloading after combats, but it does considerably more damage than P-Types. Consequently, it is most often used in large fleets that are making attacks on heavily fortified defensive emplacements, or in the defensive emplacements themselves.

Engines

The aft end of the ship can be mounted with two different types of engines, which are used for independent purposes.

The first type of engine is the Star Drive. These engines move the ship between star systems (i.e. across the map). For each Star Drive in a design, the ship can move one space on the galaxy map per turn. So a Battleship with 12 Star Drives can move 12 spaces per turn, regardless of the size of the ship. However, smaller ships can be constructed with more Star Drives than larger ships, and thus can potentially move farther (faster) in a turn. Ships without Star Drives cannot (by themselves) leave the star system in which they were built.

The second type of engine is the Inertia Drive. These engines are used to navigate within the star system and are used primarily for combat. The more Inertia Drives on a ship, the easier its P-Type weapons hit their targets and the more difficult it is to be hit. Any ship with Star Drives <u>must</u> have at least one Inertia Drive as well to be able to move.

You may also invent designs that have no engines at all. These are defensive platforms that do not move either within or out of their star system. Since they have no Inertia Engines for combat, they're relatively easy to hit. However, because they're completely still, they also get a stability bonus to target other ships. Also, since engines are usually the most expensive part of a ship design, platforms are quite inexpensive by comparison.

Main Section

The main body of the ship houses the remaining three ship components, each of which does a different kind of job.

The first type of component in this section is a Shield generator. Shields are defensive energy screens that surround the ship during combat. Each shield generator can provide enough power to absorb a specific number of points of damage taken in combat. As you might expect, this is quite useful to help prevent parts of the ship from being blown off during a fight. The more Shield generators a ship has, the more damage can be prevented during a given combat. Shields begin each combat fully charged and are depleted gradually as they absorb points of damage throughout the combat.

The second type of component here is a Hangar Bay. This provides a powerful capability as it allows the construction of carriers. Fighter craft (small ships respecting several design limitations) can be kept in these hangars and deployed during combat for independent action. Hangars can thus contain and transport armed fighters to a combat zone and thereby produce a ship similar in nature to sea-based aircraft carriers and just as powerful in their combat capabilities. Best of all, since hangars contain their own service personnel and specialized repair shops, damaged fighters return to their hangars at the end of combat and are automatically repaired!

The third type of component in the body of the ship is a Cargo Bay. A Cargo Bay is used to transport materials between star systems. This is primarily used in cargo ships to transport PV (raw materials) back to the Home World or a Production Center on a recurring basis. However, Cargo Bays can also be used to carry PI (the game's monetary units, for use in colonizing stars or similar activities) or T-Type missiles (for reloading T-Type ammunition into missile racks after combat).

Design Notation

Because of all the options possible for designing ships, a shorthand notation is needed to describe each design. This is called a "Rating". It is a short string of characters containing mostly digits, a few identification letters, and a few symbols for visual separation. Spaces may not appear anywhere in a Rating code.

This code is used directly in the game to create new ship designs, and also to show the construction specifications of ships you have built. Reports also use this Rating code to show ship components that remain functional after any combat damage.

Design Assistance

Actually putting together a Rating code and figuring out the size and cost of a proposed design is a rather complicated business and tedious to do by hand. Fortunately, both the web site and the GTac Assistant program include ship design assistants. Simply enter the quantity desired of each component into the assistant and it will calculate the Rating code, size, and cost for any ship design you care to come up with. The assistants also figure the maximum limitations for any given design and tell you when the limitations have been exceeded by your proposed design.
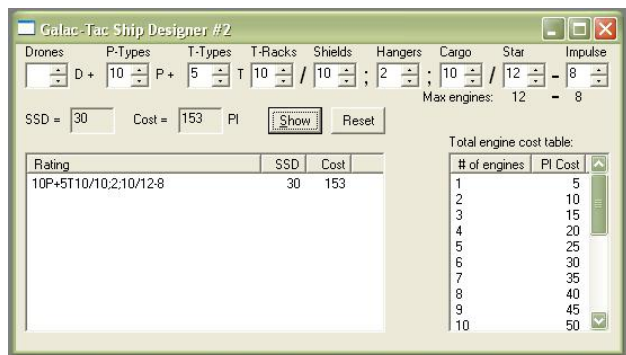
A screen shot of the GTac Ship Designer

Rating Codes

The design assistants allow you to concentrate on what kind of ship you want without having to worry about the complexities of encoding ship ratings. However, it is still useful to have a general understanding of the rating codes so you can recognize ship configurations throughout the game. Let me describe these codes in more detail so you'll be more comfortable with what you're seeing.

A Rating code is first divided into three sections, separated from one another by two slash ("/") characters. Exactly two slashes are always required in any Rating. The first section (before the first slash) indicates the type of weaponry the ship carries. The second section (between the slashes) indicates the ship's main body construction. The third and final section (after the slashes) describes the engines. So the overall structure (which must be in this order) looks like this:

weapons **/** *main* **/** *engines*

Each of these sections is further broken down into the individual components, which must be specified in order and notated as described below.

Weapons

List the number of Drones followed by the number of P-Types, followed by the number of T-Type launch tubes and missile racks. Each of these weapon types is designated by a letter (D, P, or T), and each (with its letter) is optional. Multiple weapon types are separated by a plus sign ("+"). For example:

3**D** + 5**P** + 2**T**10

indicates that the ship contains three Drone units, five P-Types, and two T-Type launch tubes with ten T-Type missile racks. (Note the required numbers both before and after the letter "T".)

Warships will often specialize in a single weapon type, but only cost and weight restrictions prevent you from combining any desired weapons together. Weaponless ships (such as scouts or cargo ships) need not include anything in the Rating before the first slash.

Main Section

List the number of Shield generators, Hangar Bays, and Cargo Bays, in that order, without any letters. Separate the numbers with semicolons (";"). Unneeded components may be left out of the Rating, but exactly two semicolons must always be present (if there are any Main section components at all). For example:

5 **;** 4 **;** 20

indicates that the ship contains five Shield generators, four Hangar Bays, and twenty Cargo Bays.

If no main section components are present at all, then the two slashes of the Rating may appear next to each other with nothing between them. The semicolons are optional in this one case.

Engines

Finally, list the number of Star Drives followed by the number of Inertia Drives, separated by a dash ("-") character. The dash is required for any ship with engines. Platforms, which have no engines, may leave out the dash as well. For example:

24 **-** 16

indicates that the ship has twenty-four Star Drives and sixteen Inertia Drives.

Putting it together

Here are a few examples of complete ship designs with a variety of Ratings for comparison.

The Rating code for a small freighter (the predefined "FX" design) is:

/;;10/20-1

meaning ten Cargo Bays, twenty Star Drives, and one Inertia Drive. (It only needs one Inertia Drive because it's not expected to get into combat.)

The predefined "DD1" (Destroyer) design:

6P/4;;/14-14

indicates six P-Type weapons, four Shield generators, fourteen Star Drives, and fourteen Inertia Drives.

The standard "ST1" (Station) design:

20P/20;;/

is a platform with twenty P-Type weapons, twenty Shield generators, and no engines.

The existing "SC1" (Scout Ship):

//19-1

is an engines-only design.

The standard "FT1" (Fighter) design:

4P/1;;/-16

has no Star Drives, so it can't move about the galaxy on its own. But it can be loaded into a Hangar Bay, carried from location to location, and deployed whenever combat ensues.

Perhaps you'd like to create your own large Battleship, with lots of firepower. You could try a design such as this:

10P+5T10/10;2;10/12-8

This would give you ten P-Types (which fire throughout the combat), five T-Type launchers that can fire its ten missiles during the first two combat rounds before running out of ammunition, ten Shield generators to keep you from getting hurt, two Hangar Bays to carry fighters that provide covering fire, and ten Cargo Bays to carry one full reload for its T-Type missile racks. It can move at the maximum speed for its size, travelling up to twelve spaces per turn to get to its destination, and fighting with a somewhat unwieldy combat agility of only eight (the best a ship this size can do).

If you'd prefer a large carrier-style ship, it might look more like this:

4D/16;12;/12-8

Such ships would include four Drones able to provide some protection from strafing and torpedo fire and sixteen Shield generators to survive combat as long as possible. Twelve Hangar Bays provide room and repair facilities for a dozen separately-built fighters that provide most of the firepower. It also can move at the maximum speed for its size, travelling up to twelve spaces per turn, but the eight (maximum) Inertia engines are just for defensive mobility because there are no direct weapons mounted on the ship itself.

Ship Size (SSD)

Your ship design determines its size, which is called the "SSD" (for Ship Size Designation). This size (which does have a maximum) also determines other limitations (particularly how many engines may be used), contributes to the cost of the ships, and affects how it performs in combat.

All of the ship's components other than engines have a bearing on SSD. If you'd really like to see the details of how the SSD is calculated, the game manual describes the formula. Most players find it easier to just use one of the ship design assistants to calculate it for them.

You may also refer to your Ship Design Limitations table on your Shipyard Report for the size-based limitations at your current Tech Level. For instance, at TL 1 you may put ships up to 5 SSD in a Hangar Bay and capital ships may be up to 30 SSD in size and still have Star Drives. (Platforms may go up to 75 SSD because they have no engines.) Your Star Drives and Impulse Drives may not exceed the listed limitations based on your ship SSD. For instance, a 10 SSD ship design at TL 1 may have no more than 21 Star Drives and 14 Inertia Drives.

Construction Delay

Ships also take time to build, and the SSD of your ship design indicates the number of turns of "delay" during which a ship is being constructed. It requires 1 turn to build a ship for every 10 SSD in size (rounded up). That means that a 2 SSD, 5 SSD, or 10 SSD ship takes only a single turn to build, so it will be available the turn after you order it to be built. An 11 SSD ship, however, would take two turns to build, becoming available to use a turn later than a slightly smaller ship. A 30 SSD battleship would require three construction turns, and a really huge platform could take eight or more turns to finish.

Ship Cost

Your ships also cost PI to construct. Every time a ship is ordered to be built you must pay its cost in PI before construction can begin. If you'd like to explore the details of how the cost is calculated to fine-turn your expenditures, the game manual describes the formula.

Using the Designs

To create a new design in Galac-Tac, use the CLASSIFY action. Keep in mind that there is a limit of only 50 classifications that may be defined at any one time, so don't classify everything you can dream up at one time because you can run out of room in the blueprint drawer at the shipyard. The DECLASSIFY action can remove designs if there are no ships in existence with that design. To construct ships using a particular design, use the BUILD action.

As you progress through the game, you may decide to invest in research to increase your Tech Level. This allows new designs to be created that make use of the improved power and reduced limitations afforded by that increase. Expect to come up with future versions of some of your designs with better capabilities as your Tech Level changes, so leave some room for expansion.

The ability to think up many thousands of different ship designs is great, but ideally they should be useful designs as well. So before deciding on a new design, think about what you want to accomplish with that kind of ship, and design it to do that job well. Keeping to your design focus will produce much more cost-effective and purpose-effective designs than just throwing things together at random. Of course, use the assistants to play with the designs all you want until you come up with whatever you think will work best for a given need.

Keep an eye out for a future article which will present in technical detail how ships behave in combat.

Now get out there and start designing that ultimate fleet!