'Mech bays house numerous cubicles for transporting and repairing BattleMechs. Each cubicle has a miniature gantry that allows technicians to work on the 'Mechs, either during transit or on a planet's surface. Each cubicle also contains hookups for fuel and oxygen that allow personnel to keep a BattleMech combat-ready at all times. The open area in each 'Mech bay contains additional repair facilities, as well as a number of anchor points to which a 'Mech can attach for repair. If the ship is fully loaded, additional BattleMechs can ride out the journey attached to an anchor point instead of in a cubicle. In addition, most 'Mech bays have an airlock massive enough to allow the ship to drop 'Mechs into combat, either in atmosphere or space. Each bay also has drop cocoons and storage facilities for spare parts. Like cargo bays, each 'Mech bay has a retractable ramp for loading and unloading. While the ship is on a planet, BattleMechs enter and exit the vessel via these heavily-reinforced ramps.

Most DropShips have small craft bays. Typically, a DropShip carries one or two shuttlecraft, each stored in a cubicle during transit. In turn, each cubicle may have its own door and operating mechanisms, and the shuttlecraft pilots tend to rely on precision flying for launching and recovery.

Vessels designed to carry several fighters or small craft often group the storage/repair cubicles around one or more launch/recovery bays. On these vessels, each storage/repair cubicle has facilities similar to a 'Mech bay.

Fighter bays have appropriate launch and recovery facilities, and their increased size makes landing much easier for a pilot. The bays also have catch-nets, huge mesh barriers designed to "catch" badly damaged or out-of-control fighters and prevent them from impacting on the rear wall of the bay. The bulkheads around each bay are as thick as the DropShip's hull, providing added protection in case of accidents. Access to the rest of the vessel from the craft bay is restricted by a series of airlocks.

Most fighter bays cannot be used while a DropShip is in atmosphere or on the ground. The majority of fighter bays are designed so that fighters "drop away" from a ship moving at a constant speed and direction; launching craft under any other circumstances is very difficult, and recovery impossible. A crane must load and unload each small craft from a DropShip on a planet's surface, and each bay has one crane to perform such operations. A DropShip flying in atmosphere can launch fighters, but only at great risk; furthermore, a DropShip cannot recover fighters while operating in atmosphere.

Many pilots call the launch/recovery bays "flight decks," a term that goes back to the first seaborne carriers used in the twentieth century. Technicians and engineers assigned to each bay often refer to themselves as the deck crew, and the officer in charge has the formal title of deck officer.

JUMPSHIPS

JumpShips are the backbone of interstellar travel. These slender, needle-like craft were first developed in the twenty-second century following the rediscovery of the works of Thomas Kearny and Takayoshi Fuchida, the two visionary scientists whose research opened the door to faster-than-light space travel. A JumpShip's long, narrow Kearny-Fuchida drive system stretches from one end of the vessel to the other. A small cockpit at the ship's fore houses the command section, and the station-keeping drive rests in the aft section. The Kearny-Fuchida drive gives the craft its ability to "jump" between two points in space up to a distance of 30 light-years apart, hence the name JumpShip.

Experiments carried out in the twenty-first century by Kearny and Fuchida at Stanford university showed that subatomic particles could, when exposed to a hyperspace energy field, jump between two points in space. The results suggested that by amplifying this effect, humans could achieve instantaneous interstellar transport by moving large objects—ships—through these jump points. However, the physicists' theories conflicted with the known laws of Einsteinian physics, and mainstream science disregarded them for many years. At the beginning of the twenty-second century, two independent research teams vindicated the work of Kearny and Fuchida and paved the way for man's journeys to the stars.

In the first decade of the twenty-second century, the Terran Alliance government funded the development of what became known as the Kearny-Fuchida hyperspace drive, the basic principles of which have remained unchanged since then. A field initiator in the aft end of the drive housing generates the hyperspace field and focuses it through the drive's titanium/germanium core, whose superconducting capacity boosts the field's strength and size. The resulting amplified field encompasses the JumpShip and any attached DropShips. Once fully expanded, the field pushes the craft through the jump point, a "hole" in space. The actual time spent in hyperspace depends on the distance traveled, but the stay is relatively short. The craft then emerges from the other end of the hyperspace rift through the second jump point, arriving at its destination. A malfunction of the K-F drive usually results in the craft simply arriving at a random point rather than the intended one, but there are documented cases of a JumpShip remaining trapped in hyperspace. The fate of such unlucky vessels remains unknown.

Opening holes in space demands vast amounts of energy, creating radiation signatures for both the traveling vessel and the space near it. Such radiation signatures can be detected just prior to a JumpShip's arrival or just after its departure. Opening a rift in space at the arrival point is usually a less controlled process than at the departure point. The necessary destruction of vast numbers of atomic particles creates a pulse of electromagnetic radiation that can be detected at considerable range. Using these energy traces, hostile forces can track a JumpShip and lie in wait to ambush DropShips or any troops carried. Only the unspoken prohibition against destroying the almost irreplaceable JumpShips, in force since the end of the brutal Second Succession War, has so far saved JumpShips from becoming military targets.

JumpShips fall into two categories. The first and most numerous is the transport JumpShip, such as the *Merchant*- and *Invader*-class vessels. Civilian and military organizations use transport JumpShips to convey DropShips between desti-