1.3 - KNOWN SPACE

As discussed above, what commonly called Known Space is a roughly oval-shaped ellipsoid that extends "up" and "down" from Earth (measured perpendicular to the galactic plane) for about 100 light-years, and 200 light-years along the galactic plane. Of course, there are scattered outposts and settlements outside of this area, but these are exceedingly rare. As of 2512, the furthest outpost from Sol is the Arab League's colony at Eta Pegasi (Matar) 215 light-years from Earth in the constellation Pegasus.

Again, there are no generalized "territories" in *Darkstar*, no borders that divide certain sectors or quadrants of space between different powers. Mankind has only been a star-faring race for about ninety years, so they have not yet reached the density required in any area (economic, population, or military) to enforce any such "star-states." The *Darkstar* universe was written as such on purpose to allow the ships of any nation to run across and fight the ships of any other nation pretty much at the players' whim.

Known Space, an Overview

A good way to envision the sheer size of the *Darkstar* universe is to consult the star chart catalogue (or find one on line, *Darkstar* uses real astronomical cartography) to find the distances between Sol and many of the star systems available, typically measured in light-years. Multiply this number by 365 to convert the distance into "light-days" and then divide that number by the c-factor listed in the *Darkstar* navigation tables. Generally speaking, most battleships and large carriers have a ninth-wave Darkstar drive (capable of a c-factor of 160). Cruisers, destroyers, and frigates have a tenth-wave system (c-factor of 300), while corvettes and gunboats have eleventh or twelfth-wave drives (c-factor of 500 or 1000). This means that battleships can reach the closest star from Earth (Proxima Centauri, 4.2 light-years from

Earth) in about ten days. Cruisers, destroyers, and frigates can do it in about five days, corvettes and below in about two and a half days, and the very fastest ships can make the trip in 37 hours. To reach even *halfway* to the *closest* boundaries of Known Space (the "average" trip, or about 50 light-years), pretty much multiply all the above numbers by ten. Thus, a battleship fleet requires the almost four months to make the typical deep-space voyage. To reach the very furthest limits, these thousands of men must stay cooped up in their ships for upwards of 17 months, not including the times required for acceleration and deceleration.

One notable "weakness" of the *Darkstar* universe, again left in on purpose, is the lack of any meaningful faster-than-light (FTL) communications. Radio messages travel at the speed of light, and have an effective range of only about 1.5 light-years before they are swallowed up in the cosmic background radiation. This effectively means there is no communication between stars beyond very fast (twelfth-wave) courier ships, which is the reason every ship class in *Darkstar* carries at least one "cutter" in its small craft bay. This results in a curious autonomy for ship captains and task force commanders. Once dispatched to a distant star system, they are expected to be there for weeks, months, or even years at a time, with only the most intermittent communication with fleet headquarters. Space is a very cold, dark, and lonely realm, where independence of the officers and men are highly-prized commodities. Commanders are thus given tremendous latitude with the execution of their orders, free to do almost anything that's needed to ensure success of their given mission. Of course, this independence and isolation drops off rapidly the closer one gets to Sol.

Many of the more heavily-traveled star systems, especially those closer to Sol, are also connected by designated "shipping lanes." These are basically networks of very large, powerful, and *unarmed* "Darkstar tugs," often completely automated. They shuttle endlessly back and forth along their pre-programmed routes, pulling anywhere from sixth to ninth-wave Darkstar velocities. For a non-Darkstar capable ship to use these "D-tugs," they simply get within a very close distance to the tug and slave their comnav computer and guidance controls to those aboard the tug. As the tug enters Darkspace, these "passenger ships" go along for the ride. It is by this method that much more commonplace, widespread, and less expensive star travel becomes possible, at least between star systems close to Sol where heavy traffic is expected. Most civilian passenger ships, tankers, factory ships, industrial transports, and ore barges use shipping lanes for regularly-scheduled interstellar transport. Of course, the star ports where these lanes intersect are immense networks of orbital installations, usually above of the gas giants near the edge of a given system. They are also prime (and heavily-defended) military targets. Entire fleets are typically stationed here, and the installations themselves are almost always armed. Such batteries of weapons are positively huge, not just because the stations themselves are the size of *several* battleships, but also because the station is not a ship that has to devote power to sublight propulsion and Darkstar drives.

Again, such immense bases are typically found only in Sol and other core systems. Once beyond a dozen light-years or so, Known Space becomes much more open, isolated, lonely, and dangerous.

What's Out There

As readers have probably noticed, the world of *Darkstar* represents a blend of science "faction" and borderline Victorian Steampunk. As such, the technology and astrophysics are actually quite conservative. Many of the more outlandish "space opera" staples of other sci-fi settings have been deliberately left out to present a cold, haunting, and realistic view of what mankind's first centuries among the stars will probably be like.

A few highlights to consider:

- There are no aliens of any kind. Nor will there be in the foreseeable future.
- There are no "earth-like" planets where people can just land in shuttlecraft, hop out, and enjoy a picnic lunch. In real-world astronomy, although some 1200 exoplanets have so been confirmed in nearby systems, none have anything close to earth-like conditions. Granted, any astronomer will tell you that this is partly because the technology has not yet been developed to detect planets that small, we hope. But the fact remains that earth-like planets are likely to be infinitesimally rare.
- Mankind has not been among the stars long enough for any significant terraforming to have taken place. However, some such projects have made significant progress on planets in the Sol System, where colonial powers have been at work for an extra hundred years or so.

- Despite the absence of earth-like planets, real-life astronomy has been amazed to find planets around virtually every kind of star imaginable, up to an including pulsars (they're still trying to figure *that* one out, since pulsars are created in supernova explosions). So planets are, quite simply, everywhere - they're just not very habitable. Also, astronomers have learned that the "model" of our solar system is incredibly calm and tranquil compared to some they've found, such as "hot Jupiters" orbiting their stars five times closer than Mercury orbits Sol. The rule regarding solar system "design" is . . . there are no rules.
- Despite the absence of terraformed planets, many planets (especially in the nearby systems) sport vast cities either underground or in geodesic domes. The huge resources mankind has found out here, coupled with his unlocking of cold fusion, have allowed truly epic feats of engineering. Settlements can also be found tunneled under sheets of ice five hundred kilometers thick, under -300° C seas of liquid methane, in the hulls of derelict battleships, or burrowed into the side of asteroid impact craters. Anything is possible, just forget the grass and sunshine.
- What stars are out there and where are exactly the same stars that are out there in real life. Such information is readily available on the internet, and a basic star chart has been included with this reference. Many stars have multiple names, players are free to use whichever they want. Usually, when a new human settlement takes root on a planet (or moon or asteroid or even comet), it's the solar body that gets the new name, not the star itself. Thus, Proxima Centauri is still Proxima Centauri, but its planets might have names like Einstein, Outreach, New Scapa Flow and Europa Prime. It's really up to the players, who can develop star systems as best suits any continuing campaigns they might establish.
- Unfortunately, this also means that there are no massive stellar-remnant nebulas, black holes, pulsars, magnetars, or other exotic astrophysical bodies within Known Space as of yet. Research shows that the closest of these wondrous objects still lie far beyond the colonial horizon described in *Darkstar.*

Layers of Space

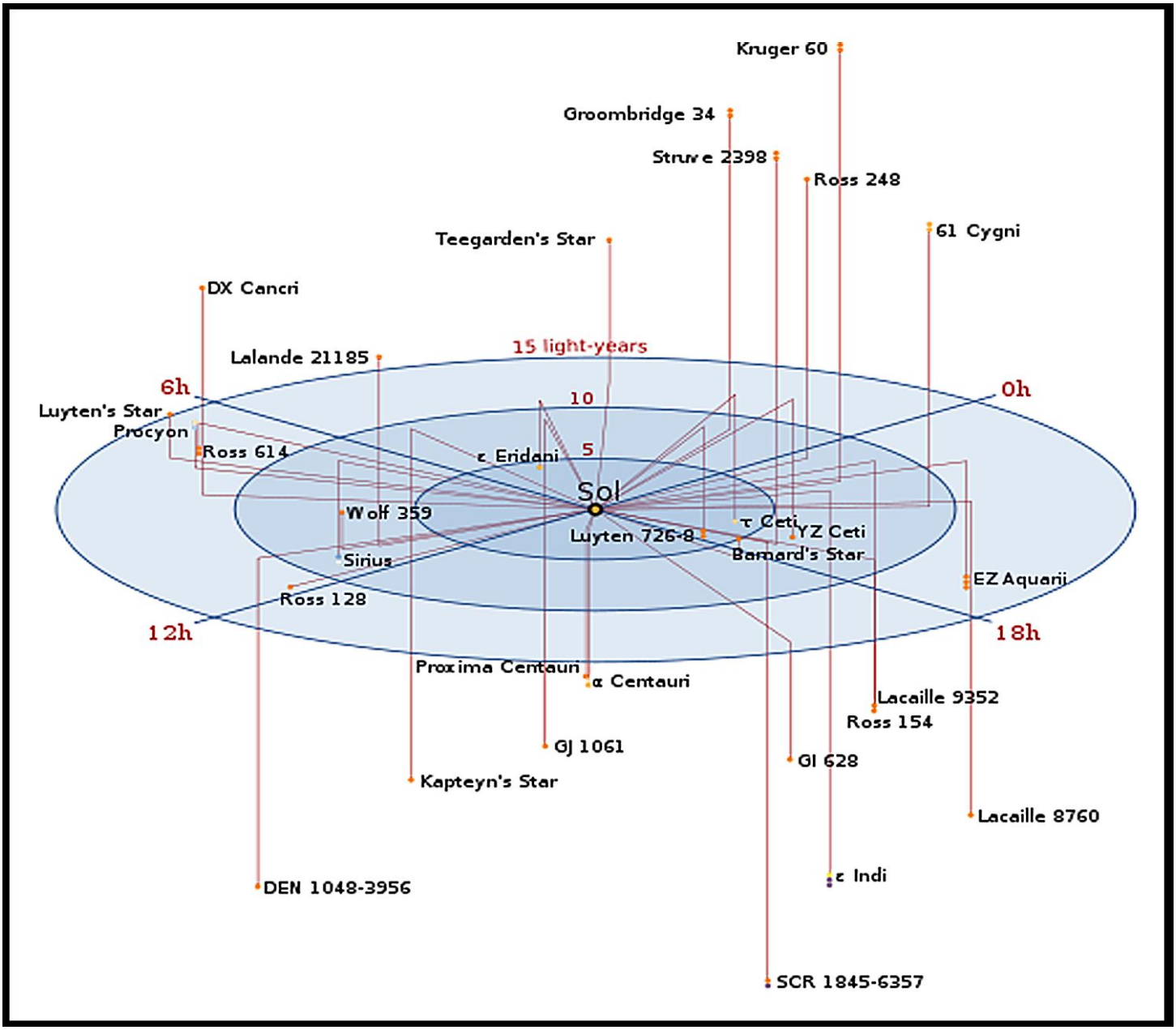
Although there is no real "geography" or "territories in the *Darkstar* universe, there are nevertheless some distinct zones that can be discussed. These are based much less on any kind of politics or military balance as they are on progress of technology and the simple elapse of time.

Sol System: After 140 years of sub-light space colonization, virtually every colonial power has as extensive presence somewhere in the Earth's home solar system, commonly called the Sol System. Warships are forbidden by treaty to operate anywhere within a sphere generally described by the orbit of Earth's moon (called the Lunar Sphere), the only exception to this being the massive orbital shipyards most powers have in high Earth orbit where such ships are built. Once these ships leave the Lunar Sphere, they are forbidden to return except for refit, repair, or decommissioning. Crew members on home leave usually have to catch a shuttle from Mars or one of the mining colonies in the Asteroid Belt.

Throughout the rest of the system, the development is vast. Major and long-established colonies have been established on virtually every major planet and moon, with further settlements, factories, and refineries, and mines built on asteroids, orbital installations, or even comets. Stretches of canyons on Mars have been enclosed sometimes over thirty-kilometer stretches, pressurized into habitats that almost resemble arctic deserts on Earth. Ships and junk float everywhere. The naval presence of all Ten Powers is massive, assume that at least a full third of any nation's warships are right here at home, protecting the industrial power base of its empire.

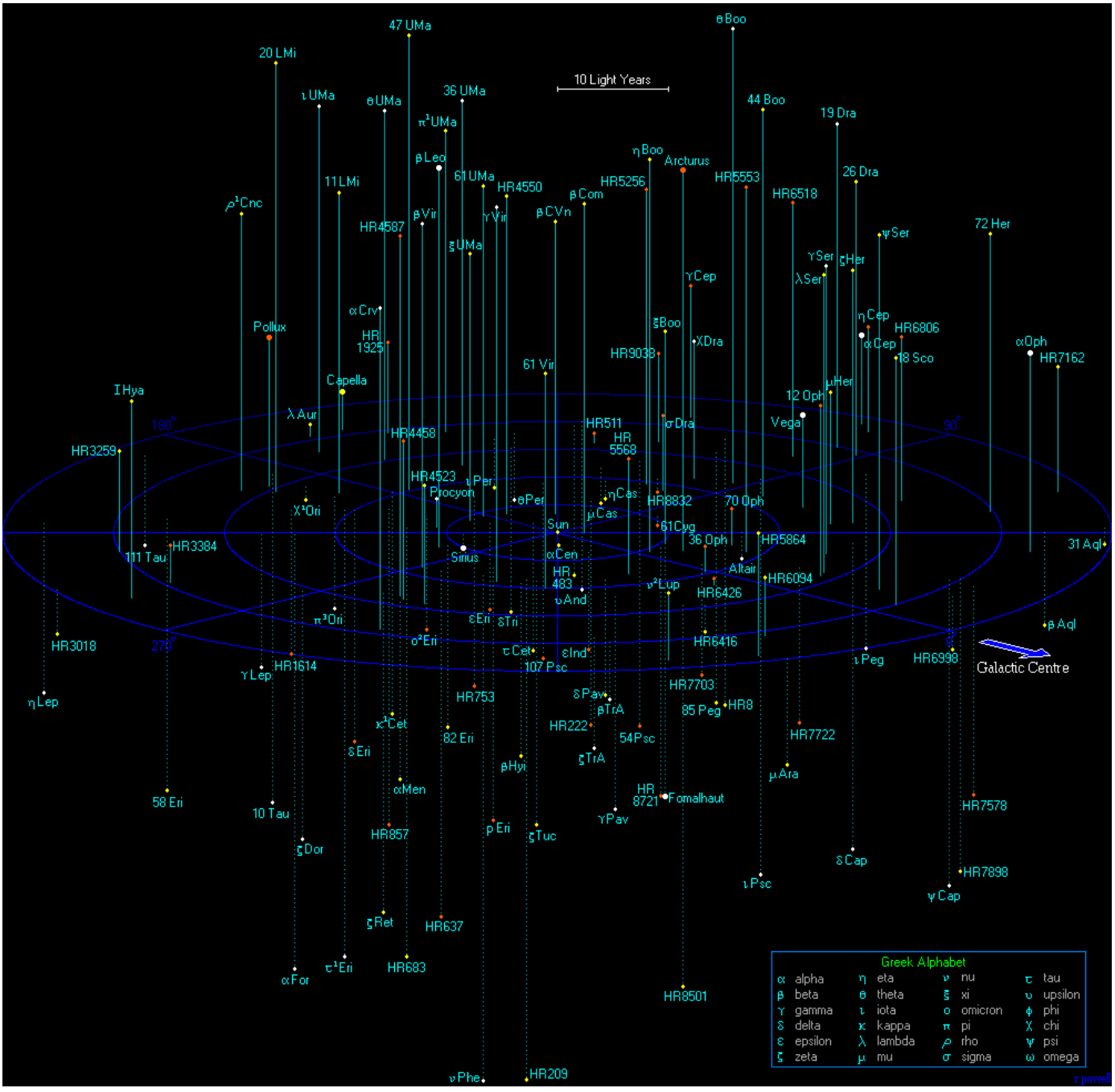
While wars do break out in the Sol System, these are exceedingly rare. In 140 years of colonization there have only been two full-scale wars and perhaps half a dozen other battles, skirmishes and "incidents." However, when one of these fights *does* catch flame, it's a conflagration for the history books. Everyone has a lot to lose here, and has the firepower to make sure they don't. A *Darkstar* scenario might happen in the Sol System maybe once a generation, but it would be one that involved at least two hundred ships and hundreds of thousands of men. Playing one on the table in an actual *Darkstar* game is possible, but would present a tremendous challenge, and take several days to set up and play. This would definitely be a situation where team play would be the best venue.

The Core (First Band): The Core, sometimes called the First Band of Space, encompasses an area roughly fifteen light-years from Earth. Within this zone, perhaps fifty stars and brown dwarfs are known to exist, many of which have planetary systems which have been moderately colonized. The nations who have the greatest presence out here are of course the United States, the United Kingdom, Japan, and the Corporate Consortium, those nations who were the first to launch into the stars with the discovery of the Darkstar drive. Although other powers that followed later were left with far few places to stake a claim (the Chinese, Imperial Prussia, and the Holy Russian Empire were next), the sheer volume that is contained Empire were next within the "First Band" and its wealth of small, rocky planets meant that virtually any star system can hold at least a small outpost of any of the Ten Powers. The major star systems in the Core, however (Proxima Centauri, Barnard's Star, Sirius, Gliese 876, Tau Ceti, Procyon, and Episilon Edrani are the most heavily populated with up to one million people per system), are likely to be dominated by the "First Wave" powers described above. Naval presence in "the Core" is significant, with perhaps a further third of most navies deployed among these fifty or so star systems.



The Second Band: Here is where most of the action (although certainly not all) takes place in *Darkstar*. This is the ring of space that extends from the Core to about fifty light-years from Sol. There are at least a thousand star systems out here, leaving plenty of space for big navies to move around in, build new bases, and invade sparsely-populated planets. Obviously, these systems aren't nearly as heavily colonized. Among all its planets, a *big* Second Band system might have 10,000 people at most. Because resources, colonies, and shipping lanes are still largely up for grabs here, naval action is sharp and frequent. That being said, the skirmishes are usually much smaller than the "Star Jutlands" of The Core or even the Sol System.

Because of the sheer volume of space and number of star systems, players have the most freedom to set up battles, campaigns, even whole wars in the Second Band. The state of colonization is still fluid enough for dynamic action, and the systems are close enough to Sol to allow the navies respectable reach into the region. Also, the relative isolation of most Second Band systems means that commanders, captains and commodores often enjoy a great deal of latitude in the interpretation and accomplishment of their missions. Still, the neighborhood is dense enough where one doesn't have to go too far to find something to shoot at. It's a perfect storm for *Darkstar*.



The Frontier (Third Band): This far out (from about 50 light-years to 100-200 light-years, the density of naval operations and the frequency of any kind of naval combat starts to fall off dramatically. It's been estimated that only about 1% of Third Band systems have any kind of human presence at all. If they do, it could be anywhere from a pioneer ship of ten people to a small settlement of 1,000 or so. The notable exceptions to this rule are the relative latecomers to the Colonial Age, the Indian Republic has a relatively large settlement at Sigma Sagittarius, while the Arab League has "New Mecca" set up at Beta Ursa Minor. And of course they have the current record-holder at Eta Pegasi (Matar) at 215 light-years.

Naval operations this far out are scarce. Most navies of the Ten Powers can't be bothered with sending extremely expensive warships this far out, where there is still so much room and resources that fighting over anything is pointless. Also, the infrastructure doesn't yet exist out here to support big naval fleets, there are no bases, fuel depots, or crew barracks to support sustained operations. Most battleships would take at least a year to get this far out from Sol. So what little naval combat there might be would be almost exclusively small knife-fights between frigates, corvettes, and gunboats. In the Third Band, a destroyer *is* a battleship.

The Third Band of Known Space doesn't effectively "end." Certainly there are no markers that let a captain know his ship has reached the edge of the map. There simply comes a point where all communications fade away, and the gravity-pulses of passing Darkstar drives can no longer be detected. Beyond this lies an impossibly vast, silent, and timeless void. Some number crunching will show that the Milky Way Galaxy encompasses an area of at least 125 *trillion* cubic light years, of which Known Space only encompasses less than four million (this comes out about 0.000000032 percent). Clearly mankind hasn't even begun taking his first baby steps out into a truly cosmic realm.