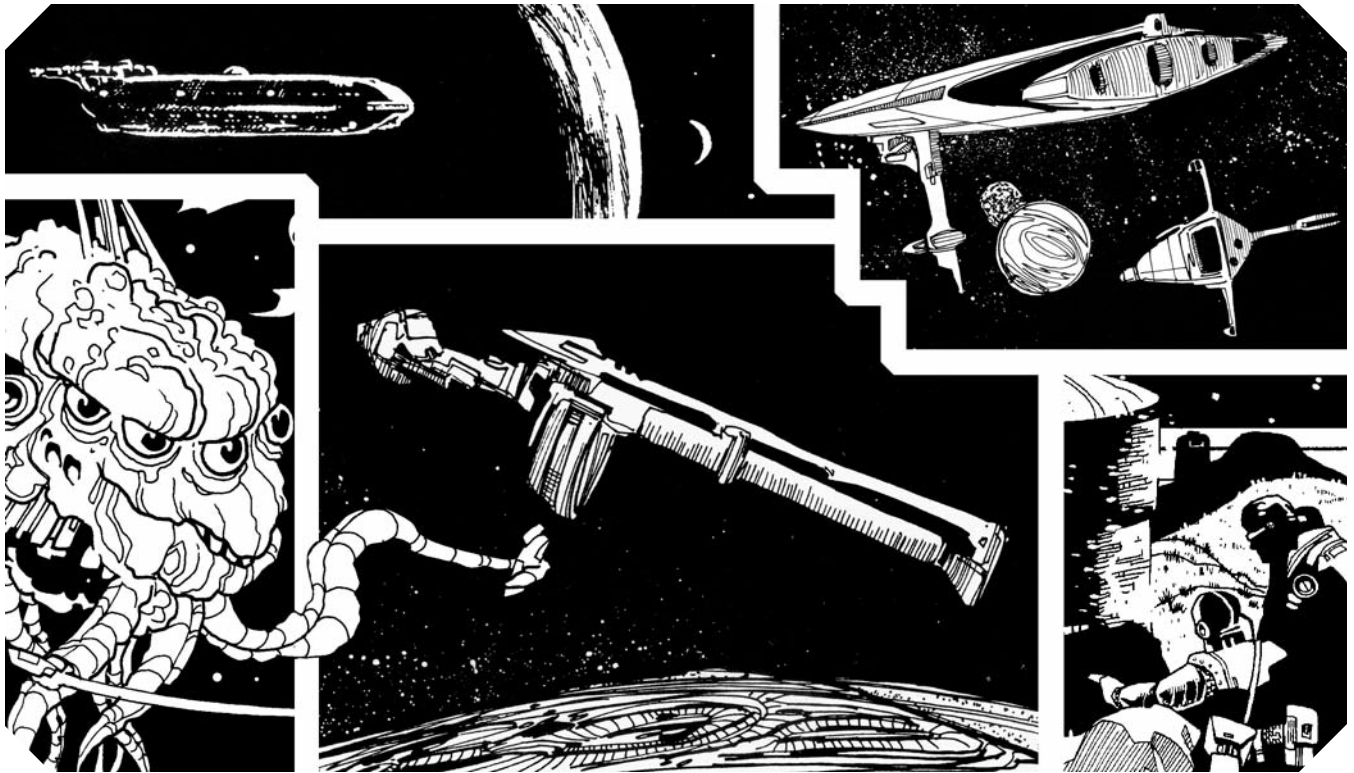


GURPS

Fourth Edition

SPACESHIPS 5

*EXPLORATION AND COLONY SPACECRAFT*TM



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An e23 Sourcebook for GURPS[®]

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INTRODUCTION

Voyaging across the void, to uncover the mysteries of strange new worlds – this is the great dream and promise of space travel. This book presents a range of unmanned space probes and manned exploration and survey vessels designed to do just that, as well the colony ships that may follow them. In addition, game mechanics for exploration, survey, and contact missions are included, as well as and rules for facing the worst “man against nature” hazards of extended voyages in space, such as cosmic radiation and solar flares.

PUBLICATION HISTORY

Some of the survey and contact rules are derived from those found in *GURPS Traveller: Interstellar Wars* by Paul Drye, Loren Wiseman, and Jon F. Zeigler.

About the Series

GURPS Spaceships 5: Exploration and Colony Spacecraft is one of several books in the *GURPS Spaceships* series. This series supports GURPS Space campaigns by providing ready-to-use spacecraft descriptions and rules for space travel, combat, and operations. GMs will need the core book, *GURPS Spaceships*, to use this book.

ABOUT THE AUTHOR

David L. Pulver is a freelance writer and game designer based in Victoria, British Columbia. He is the co-author of the *GURPS Basic Set Fourth Edition* and author of *Transhuman Space*, *GURPS Spaceships*, *GURPS Ultra-Tech*, and numerous other RPGs and supplements.

About GURPS

Steve Jackson Games is committed to full support of *GURPS* players. Our address is SJ Games, P.O. Box 18957, Austin, TX 78760. Please include a self-addressed, stamped envelope (SASE) any time you write us! We can also be reached by e-mail: info@sjgames.com. Resources include:

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much more. To discuss *GURPS* with our staff and your fellow gamers, visit our forums at forums.sjgames.com. You can find the web page for *GURPS Spaceships 5: Exploration and Colony Spacecraft* at www.sjgames.com/gurps/books/spaceships/spaceships5.

Bibliographies. Many of our books have extensive bibliographies, and we’re putting them online – with links to let you buy the resources that interest you! Go to each book’s web page and look for the “Bibliography” link.

Errata. Everyone makes mistakes, including us – but we do our best to fix our errors. Up-to-date errata pages for all *GURPS* releases, including this book, are available on our website – see above.

Rules and statistics in this book are specifically for the *GURPS Basic Set, Fourth Edition*. Page references that begin with B refer to that book, not this one.

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SCIENCE AND SURVEY VESSELS

These scientific craft are designed for follow-up expeditions on astronomical, planetary, biological, or sociological surveys. For example, biological survey ships serve as a base for the hunting, capture, or study of alien life forms found during a long-ranged study, and a means of transporting specimens or trophies home.

ORPHEUS-CLASS INTERPLANETARY SURVEY SHIP (TL10)

This fusion drive-propelled vessel carries manned scientific expeditions to the outer planets and moons in the solar system, or to the icy bodies of the Kuiper Belt. It has an onboard chemical refinery for processing fuel at the destination. It uses an unstreamlined 3,000-ton hull (SM +9) 200 feet long.

Front Hull	System
[1]	Metallic Laminate Armor (dDR 15).
[2]	Habitat (eight labs, three offices, and robofac minifac).
[3]	Hangar Bay (100 tons capacity).

Front Hull	System
[4]	Science Array (comm/sensor 10).
[5]	Habitat (five cabins with total life support, two gyms, four-bed automed sickbay, 10 tons cargo).
[6]	Cargo Hold (150 tons).
[core]	Control Room (C8 computer, comm/sensor 8, and six control stations).

Central Hull	System
[1]	Metallic Laminate Armor (dDR 15).
[2-4]	Fuel Tanks (150 tons hydrogen with 36 mps delta-V each).
[5!]	Chemical Refinery (50 tons/hour).
[6]	Engine Room (two workspaces).

Rear Hull	System
[1]	Metallic Laminate Armor (dDR 15).
[2-3]	High-Thrust Fusion Rocket Engines (0.01G acceleration each).
[4-6]	Fuel Tanks (150 tons hydrogen with 36 mps delta-V each).
[core]	Fusion Reactor (de-rated, one Power Point).

It has spin gravity (0.15G). The typical complement consists of six control crew, one medic, and two technicians.

TL	Spacecraft	dST/HP	Hnd/SR	HT	Move	LWt.	Load	SM	Occ	dDR	Range	Cost
----	------------	--------	--------	----	------	------	------	----	-----	-----	-------	------

PILOTING/TL10 (LOW-PERFORMANCE SPACECRAFT)

10	Orpheus-class	100	-3/5	13	0.02G/216 mps	3,000	261	+9	10ASV	15	0	\$146M
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DARWIN-CLASS BIO-SURVEY STARSHIP (TL10^)

This vessel is small enough to be operated by a private company rather than a government. Its streamlined 1,000-ton hull (SM +8) is 150 feet long. It carries laboratories for on-site research, and cages for living samples. The hangar bay holds small craft or ground vehicles, but is also useful for the capture and storage of large creatures – by flooding it, even a whale-sized aquatic creature could be accommodated.

Front Hull	System
[1]	Metallic Laminate Armor (dDR 7).
[2-5]	Hangar Bay (30 tons capacity each).
[6]	Habitat (six cabins).
[core]	Control Room (C8 computer, comm/sensor 7, and four control stations).

Central Hull	System
[1]	Metallic Laminate Armor (dDR 7).
[2-3]	Habitats (six cells each).
[4]	Habitat (two labs and two-bed sickbay).
[5!]	Tertiary Battery (one 10MJ improved laser turret, 43.5 tons cargo).
[6]	Engine room (one workspace).

Rear Hull	System
[1]	Metallic Laminate Armor (dDR 7).
[2]	Fusion Torch Engine (with water, 1.5G acceleration).
[3-4]	Fuel Tanks (five tons water with 5 mps delta-V each).
[5-6!]	Stardrive Engines (FTL-1 each).
[core]	Fusion Reactor (two Power Points).

It has spin gravity (0.1G). Personnel include four control crew, one medic, four scientists, one technician, and one turret gunner.

TL	Spacecraft	dST/HP	Hnd/SR	HT	Move	LWt.	Load	SM	Occ	dDR	Range	Cost
----	------------	--------	--------	----	------	------	------	----	-----	-----	-------	------

PILOTING/TL10 (HIGH-PERFORMANCE SPACECRAFT)

10^	Darwin-class	70	-1/5	13	1.5G/10 mps	1,000	169.5	+8	60ASV	7	2x	\$62.6M
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Top air speed is 3,100 mph.

PLANETARY EXPLORATION

Every new planet is the product of billions of years of isolated evolution, full of traits unique to itself. Real understanding of any world requires explorers (or their robots) to go down to the surface and get their hands dirty.

GEOLOGICAL SURVEY

A detailed terrain map from active sensors gives some information about subsurface geological formations and tentative knowledge of the world's geologic activity (see *GURPS Space*, pp. 119-121), but a complete picture requires on-site inspection. At a minimum, a number of geological surveys equal to the diameter of the planet in thousands of miles at different types of terrain are required.

Each such survey requires 40 man-hours each of Geology and Electronics Operation (Scientific) work and the use of specialized equipment to obtain rock or ice-core samples, seismic readings, and measuring key geologic features. Portable laboratories (see *GURPS Ultra-Tech*, pp. 66-67) are carried as cargo for this purpose.

Modifiers: -2 if no active sensors were used in mapping; equipment modifiers.

The collected samples are returned to the survey vessel. At the GM's discretion, these may be treated as "on-site" resources for Prospecting; provide evidence of exotic transuranic elements; have fossils or embedded organisms (requiring use of Paleontology skill to analyze them); or possess other properties of interest.

Analysis

A Geology skill task (taking 40 hours of work) provides a preliminary assessment of planetary resources.

Modifiers: Apply modifiers from the spacecraft's geology lab facilities.

This gives a precise estimate of the age of the planet, and identifies any special features about its overall composition. On planets without life-forms, this should be sufficient to determine the Resource Value Modifier (see *GURPS Space*,

p. 87). Determining the exact mineral wealth of the planet (and what constitutes "valuable" varies by TL and setting) and locations for commercial extraction takes months or years of additional work, but the analysis provides enough data within an order of magnitude for decision makers to judge whether to proceed with prospecting and exploitation. Chemistry might be necessary to identify trace elements or the structure of unusual compounds.

BIOLOGICAL SURVEY

A vessel's integral equipment supports one simultaneous survey per biology or Science! lab aboard. On a garden world with abundant native plant and animal life, it is impossible to do more than the most rudimentary research into the planet's ecology (for that, see below).

During the biological survey, the explorer collects soil, air, and water samples, deploys unattended sensors, recovers seeds and insect equivalents, and traps animal life for later analysis. Small animals can be easily captured for intensive study; large creatures are usually better anaesthetized or killed, then autopsied, to enable gross anatomic studies. Tissue samples, ova, and sperm are collected for gene sequencing and possible creation of research specimens using growth tanks (p. 23).

If available, robots disguised with biomorphic coverings that were grown on-site, or captured animals implanted with neural interfaces, deploy surveillance devices and direct researchers to nests and food sources. Capturing or monitoring animal specimens can play out as a series of mini-adventures so long as the players and GM are comfortable with the details.

A preliminary biological survey requires at least as many study sites as there are distinct environments on the world, although settling for a few representative locations is common. The survey requires at least 60 man-hours of Biology work per environment studied. Specialties may be required (Botany to study plant samples, Zoology for captured animals, Biochemistry or Microbiology for bacteria and soil samples, and so on). On worlds with extensive seas or oceans, GMs may split biological survey work into separate land and ocean surveys, treating each distinctly. Ocean surveys require that the team has equipment for underwater operations, e.g., submarines (manned or robotic), diving gear, etc.

Modifiers: Equipment quality.

Completion of the survey recovers a representative collection of biological organisms and environmental samples (such as soil samples).

Analysis

Analysis is a long task that requires 20 hours of Biology work for *each* survey to catalogue and assay the samples collected. Use the appropriate planet-type specialty (p. B180).

Surveys on Non-Garden Worlds

The survey rules detailed above mostly apply to garden worlds where there is a wide variety of obvious life. On other worlds, it may be uncertain whether life even exists at all! Life-forms may be limited to microorganisms, be found only in a limited number of environments, or simply be too alien for easy identification. If so, the primary goal of a biological survey is to determine whether there is any life. The GM may impose penalties or extend the time required based on how hard the life-forms are to find or analyze. If it is confined to certain environments or regions of the planet, the expedition must search the right spot. For instance, the only life on a world might be located in thermal vents at the bottom of a subsurface ocean beneath 50 miles of ice. A survey performed at the surface would reveal no life; the explorers would only succeed if they breached the ice and sampled the deep ocean environment.

LOST IN SPACE

Vessels traveling through normal space have no problem navigating, but the peculiarities of stardrive technology may result in starships experiencing navigation errors: drive malfunctions that result in a faster-than-light voyage ending up many parsecs from where it's supposed to be. Similar difficulties occur when exploring a new jump point or wormhole. The starship may have the power to get home again . . . but only if the navigator can find out where the ship is in the first place!

The best way for a lost craft to find itself is by using pulsars. These spinning neutron stars emit powerful and directional beams of radio waves that sweep through space with the regularity of an atomic clock. Moreover, each pulsar emits radiation with a unique pulse period and shape.

The galaxy's pulsar characteristics and locations are well known, and are the equivalent of lighthouse beacons for lost interstellar travelers. By tracking the exact time of arrival of pulses from a sample of pulsars, a vessel's navigator can determine the position of the starship.

Locating pulsars requires using a spacecraft's comm/sensor array as a radio telescope. Roll against the lower of Astronomy and Navigation skill every eight hours, adding the ship's array level; apply a penalty of -8 if using a basic or tactical array and -4 for a science or multipurpose array. Three successes means the vessel's location is known. Using documented pulsars for interstellar navigation is workable if one is still in the same galaxy or an adjacent satellite galaxy (e.g., one of the Magellanic Clouds).

SPACE MONSTERS

Active, aggressive space-traveling vacuum-dwelling creatures capable of threatening a starship are not very plausible, but then again neither is faster-than-light travel . . . and they add interest to a space-opera setting.

The most likely habitat for vacuum-dwellers is a system's Kuiper Belt or Oort cloud (where water – as ice – and complex hydrocarbons are found among comets). Another possible space environment is the (relatively) dense molecular clouds in nebulae, though the being could be a complex magnetic field or energy pattern within a stellar atmosphere. Even more exotic environments are possible: Creatures could be natives of hyperspace.



Space monsters may have a complex reproductive cycle in which some stages live on small bodies, planets, or stars while others migrate through space.

Cryptobiology of Space: Myths and legends of a particular space monster may convince a patron to fund a bio-survey expedition into a distant deep-space location to prove its existence. There may not be a real monster but the expedition itself

still faces plenty of other challenges, especially if the creature's rumored haunts are politically sensitive areas (located between warring powers), infested by pirates, etc.

Here Be Dragons: Aggressive space monsters happen to infest a particular region of space – or perhaps live in hyperspace or near wormholes – and don't like spaceships! (Maybe they think they're rival beasts intruding on their territory, or they try to mate with them with catastrophic results.) Such periodic attacks might be a rare menace, or they could be a common "wandering encounter" that justifies arming civilian spaceships.

Moby Dick: Space monsters may produce exotic and valuable substances in their bodies. Maybe they're living superfusion reactors with magnetic monopoles, or they have organs that are the key to faster-than-light travel, or their bodies contain advanced organic superconductors. Hunting them is lucrative, but also potentially dangerous – the creatures themselves are a threat, rival hunters (or game wardens) are present, or other great entities also prey upon them.

Wild Horses: If you capture a space monster, maybe you can tame it and harness it to propel a spacecraft, ride on or in it, or enter symbiosis with it.

The Creature That Ate Space Station Alpha: A space monster (or swarm of monsters) attacks a station or colony! The colonists have inadvertently upset the monster – perhaps they mined an asteroid or comet that was really one of its eggs or nests, or a megaproject (building a Dyson sphere) encroached on its territory. Maybe they just had the bad luck to settle a system in the path of a million-year migration cycle for a swarm of battleship-sized fusion-powered space locusts! Solving the problem involves a combination of exobiology (to find out more about the aliens' strengths and weaknesses) and space warfare (to stop them).

If space monsters don't exist naturally, it may be possible to build them. *GURPS Bio-Tech* (p. 98) contains character creation guidelines and examples of living bio-spaceships. These rules can be easily adapted to create natural space monsters.

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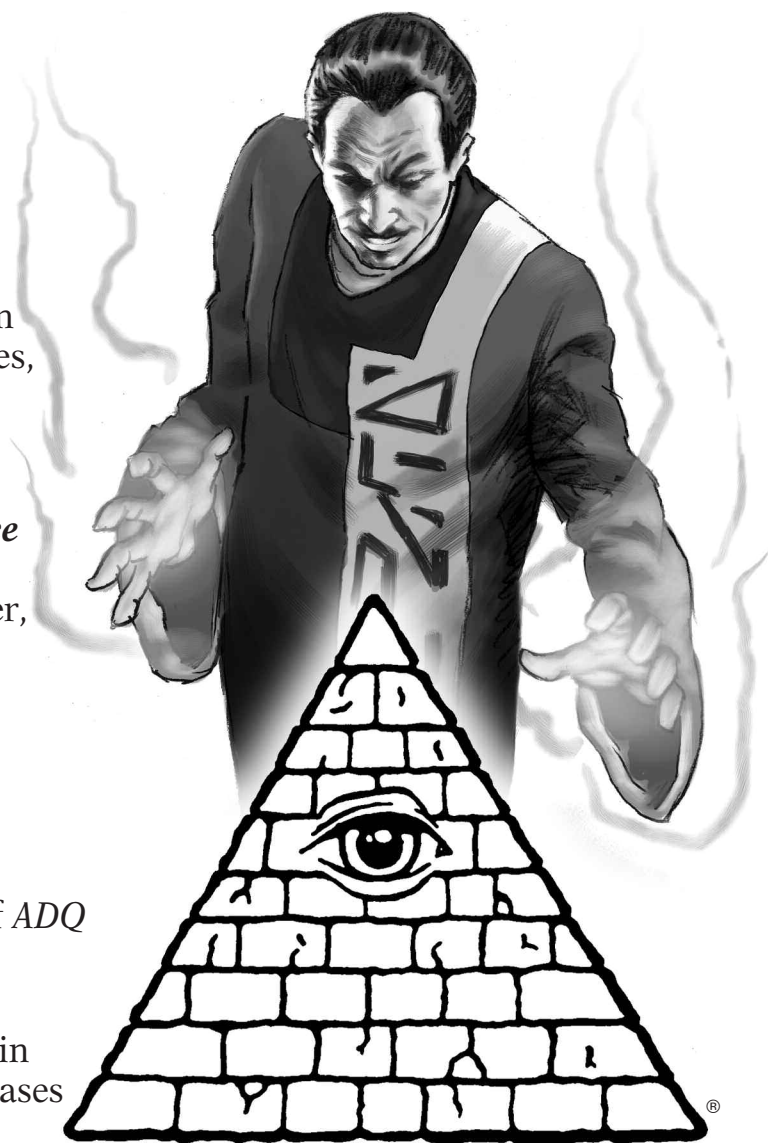
... journey to all the undiscovered countries, boldly
going where no man ... where no one ... has gone
before.

– Captain James Kirk, *Star Trek VI:
The Undiscovered Country*

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