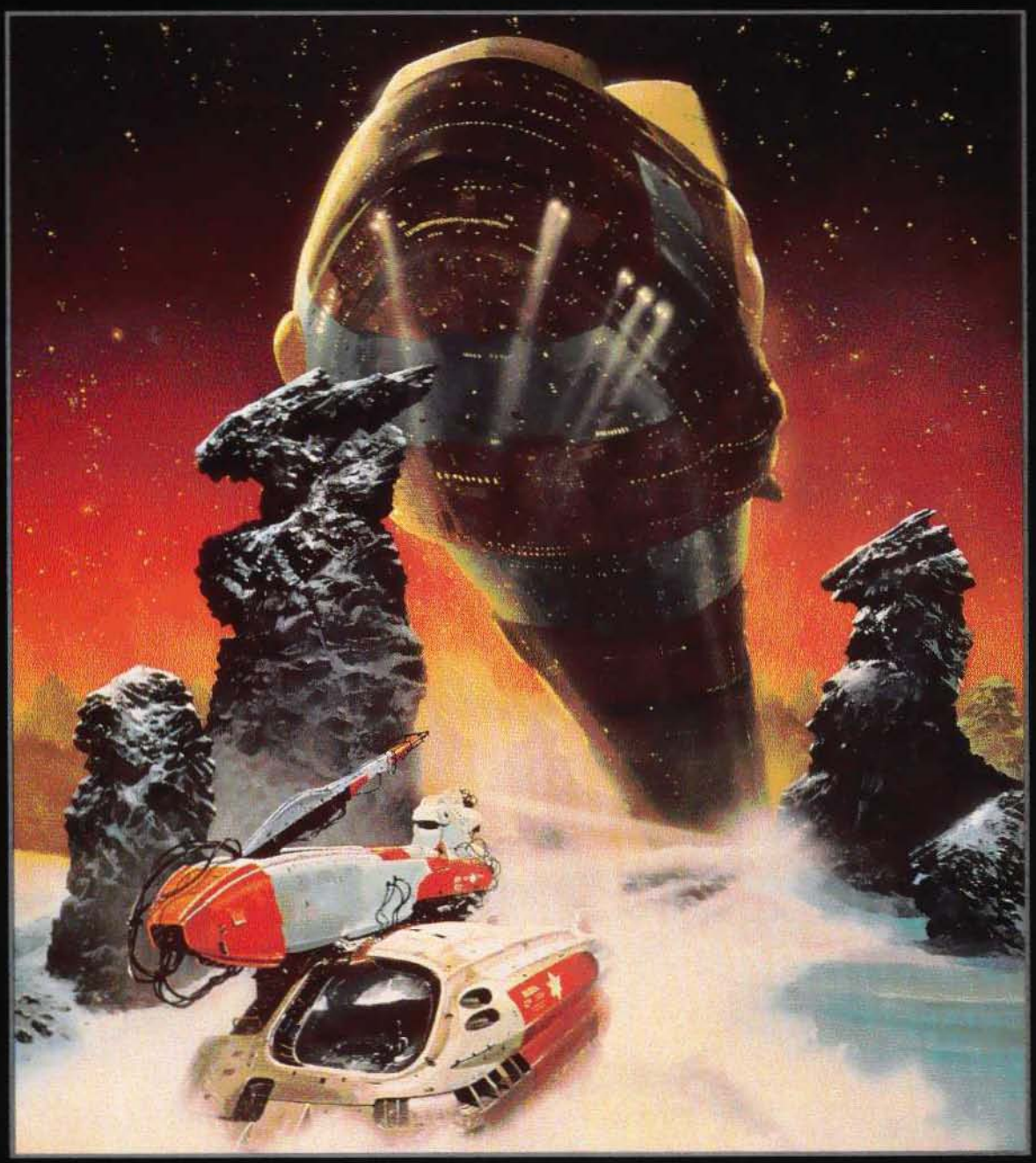
# T4 STARSHIPS™

## MARC MILLER'S TRAVELLER®




# Science-Fiction Adventure in the Far Future



# The Future is Around The Corner

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# Credits

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A Special Thanks to Guy Garnett and David Golden for their huge undertakings and great support. Without these two, Traveller would be just another space role-playing game.

Ship Designs credits are listed as Chief Naval Architects.

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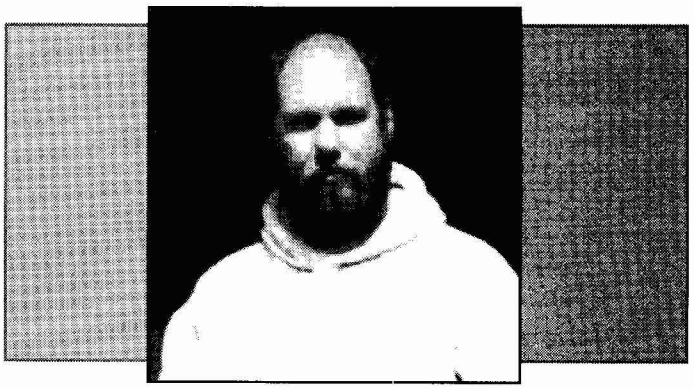

## Don Perrin

Don Perrin is a displaced Canadian now living in Williams Bay, Wisconsin as Vice President of Operations with Mag Force 7, Inc. Along with his life partner Margaret Weis, he is writing a series of novels in the Star of the Guardians universe, the first hitting the shelf in April 1995. His love is games of all sorts, and now has three successful collectible game designs to his credit with Star of the Guardians Collectible Trading Card Game and Wing Commander® Collectible Trading Card Game and the Star Trek Collectible Trading Card Game.

### Biographical Information:

Born, 1 October 1964, Iserlohn, Republic of Germany.
Graduated, Royal Military College of Canada, Kingston, Ontario, Canada, Bachelor of Science, Mathematics and Physics, 1987.
Regular Army Officer, Corps of Electrical & Mechanical Engineers, Canadian Department of National Defense, 1983 to 1992.
Reserve Army Officer, 30th Field Artillery Regiment (The Bytown Gunners), Royal Canadian Artillery, Canadian Department of National Defense, 1992 to 1994.
Software Engineer, the CGI Group, Systems Engineering Division, Ottawa, Ontario, Canada, 1992 to 1993.
Director of Electronic Warfare Software Development, Software Kinetics Limited, Ottawa, Ontario, 1993.
Currently a freelance author.

### List of Works:

*Knights of the Black Earth*, a science fiction novel set in the Star of the Guardians universe, co-author with Margaret Weis, Penguin USA/ROC, April 1995.
*Robot Blues*, the second science fiction novel set in the Knights of the Black Earth universe, co-author with Margaret Weis, Penguin USA/ROC, 1996.
*Theros Ironfeld*, a Dragonlance® Warriors series novel, TSR, Inc., 1996.
*Doom Brigade*, a War of Chaos series novel, co-author with Margaret Weis, TSR, Inc., 1996.

### Short Stories:

"First Dragon Army Bridge Building Company" in The Dragons of Krynn short story collection, TSR 1994.
"War Diary of Lord Ariaken" to be published by TSR.
"Island of the Brutes" in The History of Dragonlance collection, TSR 1995.
"Fire One!" in Dragons of War short story collection, TSR, 1996.
"Free Trader Beowulf" in the Journal of the Travellers Aid Society, Imperium Games, 1996.

### Softbound Rule Books:

*Men at Arms*, 15 and 25mm Medieval Miniatures Rule Book, Editor and Publisher, 1993

### Board and Card Games:

*Star Trek*® Collectible Trading Card Game from Fleer Skybox, design assistant to Jeff Grubb.
*Wing Commander*® Collectible Trading Card Game from Mag Force 7, Co-designer and Producer with Jeff Grubb.
*Star of the Guardians* Collectible Trading Card Game from Mag Force 7, Designer and Producer, 1995.
*Supremacy*®, Board Game from Supremacy Games, Military Consultant, 1988.

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# INTRODUCTION

The Third Imperium, much like any other organization of space-faring planets, relies on movement between planets to further its ends. Starships have served to move individuals, cargos, ideas, and passions across huge expanses of the known galaxy. To the seasoned traveller, the worlds and ports visited are merely transient places - sites for business, education, training, or battle. The true traveller calls the starship home.

This book describes the starships most commonly found in the new Third Imperium, as well as their use. Some of these ships are not new. Many have been in service for generations. They are, however, the backbone of Imperial society. Without them, there would be no trade, commerce, travel or off-world news.

All noteworthy starships traveling the Imperial space are presented here, along with detailed deck plans. Many events happen on starships, so it is important to know where things are happening, where different sections and equipment are, and how to get there. Each ship's capabilities are outlined in what is called a Universal Ship Profile. This standard notation describes each vessel and makes it possible to use the ship in the **Traveller** game and its basic ship-combat system.

This book also features the Standard Ship Design System. Although there is an immense amount of variety in the ships already detailed, there is always a need for a different ship than is available. Both civilian and military leaders commission the building of starships. Many times, the simpler module building system employed by most shipyards is not enough. The inherent wastage in ship designs from the lack of optimization can be critical in the design of a specific-to-type ship. The Standard Ship Design System provides naval architects the opportunity to create ships that use standardized parts, but do not have as much inherent waste as modular ships.

As Emperor Cleon I once said, "The Empire is nothing without the services of both civilian and military craft. To their crews, we give great thanks. Now, onward into space!"

## The Imperial Calendar

Counting time is an essential part of any activity. Naturally enough, many different ways of counting time have been established throughout the regions of space explored by man and by the races that man has encountered. The major time-counting for use in the Imperium is known as the Imperial Calendar.

Imperial time-keeping is based on the time units of the Terran Confederation. During the Rule of Man, the basic units of the Terran day (24 hours) and the Terran year (365 days) were imposed on First Imperium territories by the Terran conquerors. During the Long Night, the day and year remained in place in what little interstellar trade was available, and by the time the Third Imperium was established, these particular spans for day and year was easily accepted.

The time periods were simplified: The day was made exactly 24 hours, and the year exactly 365 days.

**Base Point:** Imperial dates count from the year of the founding of the Third Imperium: the year 0. Dates before that are negative, dates after that are positive (with the sign usually suppressed).

**Date Format:** Within each year, the Imperial dating system uses a modified Julian system which consecutively numbers the days of the year from 001 to 365. Weeks of seven days and months of 28 days are used to indicate periods of time, but they are not named and are not used to indicate dates. The first day of the year is 001; the 100th day is 100.

A complete day and year is given in a date group: a three-digit day and a three- or four-digit year, separated by a hyphen.

**Imperial Format: ddd-yyyy (ddd =day; yyyy=year)**

Each year begins with a special day called Holiday: day 001. According to the Imperial calendar, Holiday is not a part of any week, but stands alone as a special day.

Because the Imperial year does not vary in length, it is possible to reuse the calendar from year to year, and days always fall on the same date (008 is always a Sevenday).

The adoption of the standard calendar produced a requirement for names for the days of the week. The decision was made to scrap the traditional Anglic day names and instead a series of numbered day names were established: Oneday, Twoday, Threeday, Fourday, Fiveday, Sixday, and Sevenday. The commonly accepted abbreviations are used extensively for these day names (1day, 2day, 3day, 4day, 5day, 6day, and 7day).

The Imperial calendar shown here is the standard one distributed throughout the Imperium. It can be used to determine dates for any year, plan for upcoming events, or as a record to denote the passage of time. It is a useful reference for noting dates for required ship maintenance, when starship payments are due, when birthdays will fall, and other time-keeping tasks.

The typical starship voyage spends one week in jumpspace between star systems. Most commercial ships spend the next week in their destination star system: traveling to the destination world, unloading cargo, finding new cargo and passengers, then traveling away to the jump point again. All of these activities can be tracked with the Imperial calendar.

# THE IMPERIAL CALENDAR

| Holiday | Oneday | Twoday | Threeday | Fourday | Fiveday | Sixday | Sevenday | Oneday | Twoday | Threeday | Fourday | Fiveday | Sixday | Sevenday |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | 002 | 003 | 004 | 005 | 006 | 007 | 008 | 009 | 010 | 011 | 012 | 013 | 014 | 015 |
| | 016 | 017 | 018 | 019 | 020 | 021 | 022 | 023 | 024 | 025 | 026 | 027 | 028 | 029 |
| | 030 | 031 | 032 | 033 | 034 | 035 | 036 | 037 | 038 | 039 | 040 | 041 | 042 | 043 |
| | 044 | 045 | 046 | 047 | 048 | 049 | 050 | 051 | 052 | 053 | 054 | 055 | 056 | 057 |
| | 058 | 059 | 060 | 061 | 062 | 063 | 064 | 065 | 066 | 067 | 068 | 069 | 070 | 071 |
| | 072 | 073 | 074 | 075 | 076 | 077 | 078 | 079 | 080 | 081 | 082 | 083 | 084 | 085 |
| | 086 | 087 | 088 | 089 | 090 | 091 | 092 | 093 | 094 | 095 | 096 | 097 | 098 | 099 |
| | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 |
| | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 |
| | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 |
| | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 |
| | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 |
| | 170 | 171 | 172 | 173 | 174 | 175 | 176 | 177 | 178 | 179 | 180 | 181 | 182 | 183 |
| | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 | 192 | 193 | 194 | 195 | 196 | 197 |
| | 198 | 199 | 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 | 208 | 209 | 210 | 211 |
| | 212 | 213 | 214 | 215 | 216 | 217 | 218 | 219 | 220 | 221 | 222 | 223 | 224 | 225 |
| | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 |
| | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 252 | 253 |
| | 254 | 255 | 256 | 257 | 258 | 259 | 260 | 261 | 262 | 263 | 264 | 265 | 266 | 267 |
| | 268 | 269 | 270 | 271 | 272 | 273 | 274 | 275 | 276 | 277 | 278 | 279 | 280 | 281 |
| | 282 | 283 | 284 | 285 | 286 | 287 | 288 | 289 | 290 | 291 | 292 | 293 | 294 | 295 |
| | 296 | 297 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 308 | 309 |
| | 310 | 311 | 312 | 313 | 314 | 315 | 316 | 317 | 318 | 319 | 320 | 321 | 322 | 323 |
| | 324 | 325 | 326 | 327 | 328 | 329 | 330 | 331 | 332 | 333 | 334 | 335 | 336 | 337 |
| | 338 | 339 | 340 | 341 | 342 | 343 | 344 | 345 | 346 | 347 | 348 | 349 | 350 | 351 |
| | 352 | 353 | 354 | 355 | 356 | 357 | 358 | 359 | 360 | 361 | 362 | 363 | 364 | 365 |

The Imperial standard work week begins on Oneday and ends on Fiveday. Sixday and Sevenday are normally days off, although merchants wishing to take advantage of most people being off do adjust work schedules.

The Empire observes several standard holidays throughout the year. Apart from Holiday (Day 001), four other days are recognized as Imperial-wide holidays, all of which fall on a Oneday. The Emperor's Birthday is celebrated on Oneday 051. Empire day, celebrating the achievements of the Imperial Military, is Oneday 114. Standard Religious Holiday, for all religions to observe their most holy day, has been standardized to fall on Oneday 184. Finally, Harvest Revel is held on Oneday 282 to give thanks for the many blessings of the Imperial Throne. Differing Regions and planets have other holidays added on, but these are the Imperial decreed holidays that are observed regardless of location.

## Rescue Ball

Tons: 5
Crew: 0
Cargo: 0

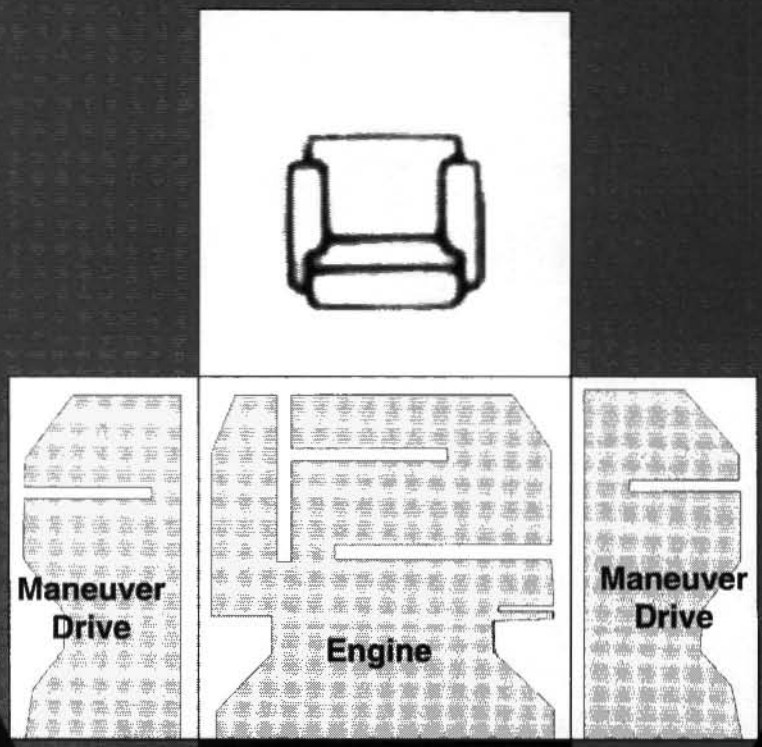
Volume: 70
Passengers High/Medium: 0
Controls: Minimal

Cost in Mcr: 12
Passengers Low: 4 Emerg
Tech Level: 10

6 Size Rating
0 Fire Control Rating

0 Jump Rating
1 G Rating
1 Power Plant Rating
1 Fuel Rating
0A 1P 0J Sensor Rating
0 Armor 1 Structure

The rescue ball was first installed on ships before the rise of the Third Imperium. Their use is not standard, but all passenger carrying vessels licensed in the Imperium contain enough rescue balls to carry passengers and crew. They are equipped solely to boost survivors from a crippled ship and into space to await pickup by rescue ships. Four passengers or crew can use the Rescue Ball, but are immediately put into cryogenic suspension.


2 meters
Maneuver Drive
Engine
Maneuver Drive

## LAUNCH

Tons: 20
Crew: 2
Cargo: 6

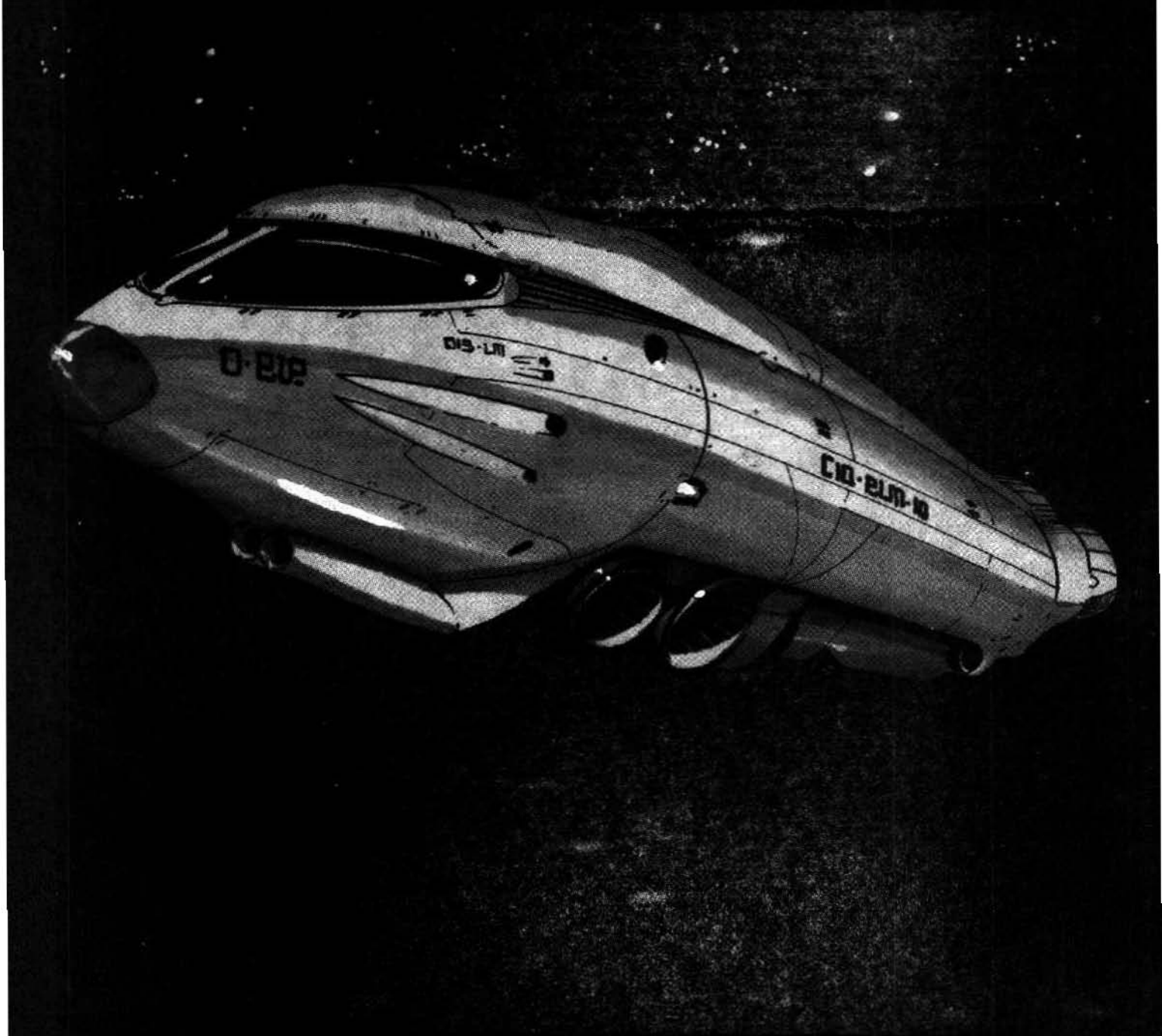
Volume: 280
Passengers High/Medium: 6
Controls: Civilian Standard

Cost in Mcr: 14
Passengers Low: 0
Tech Level: 8

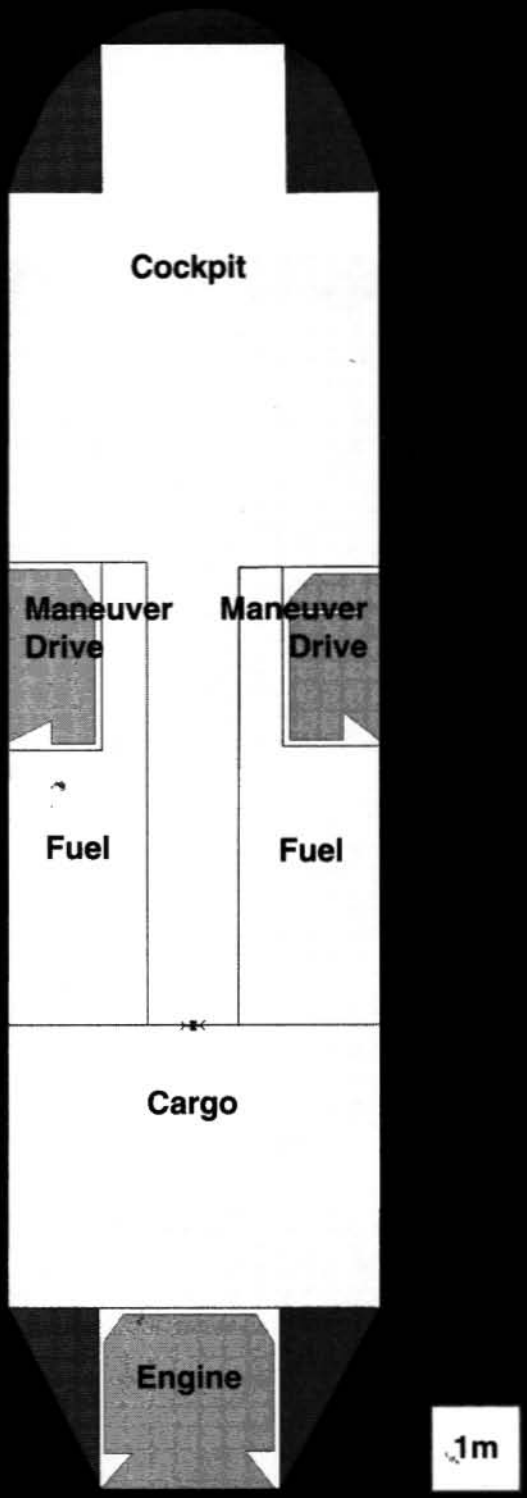
7 Size Rating
0 Fire Control Rating

0 Jump Rating
1 G Rating
1 Power Plant Rating
5 Fuel Rating/ Scoop/ Refine
0A 2P 0J Sensor Rating
0 Armor 1 Structure

Using a 20-ton hull, the launch is capable of 1-G acceleration, carries 1 ton of fuel tankage, and has a crew of two. It is used to handle small transport tasks not suited for larger vessels.



# LAUNCH


Cockpit
Maneuver Drive
Maneuver Drive
Fuel
Fuel
Cargo
Engine
1m

## Ship's Boat

Tons: 30
Crew: 2
Cargo: 6

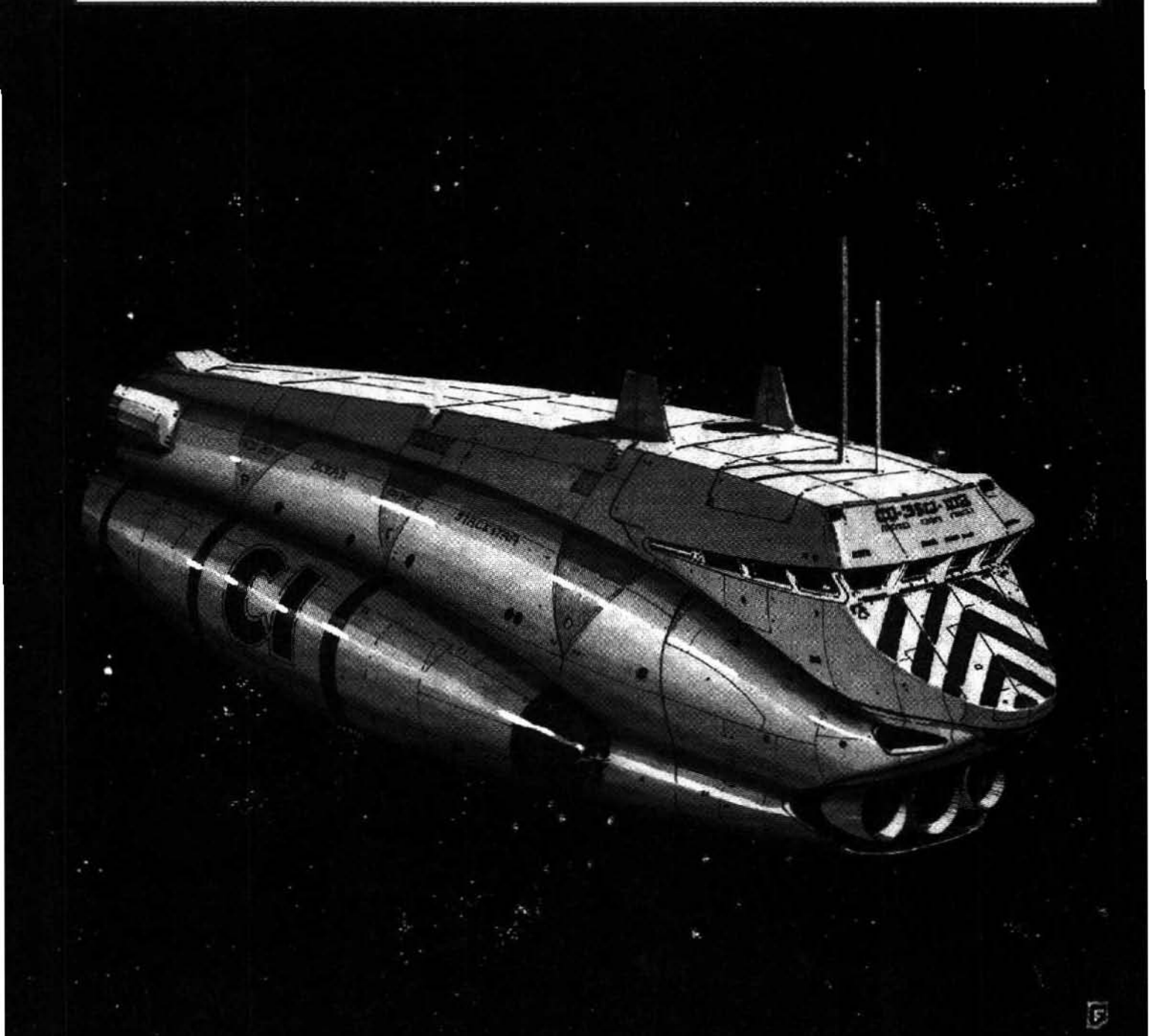
Volume: 420
Passengers High/Medium: 6
Controls: Civilian Standard

Cost in Mcr: 16
Passengers Low: 0
Tech Level: 9

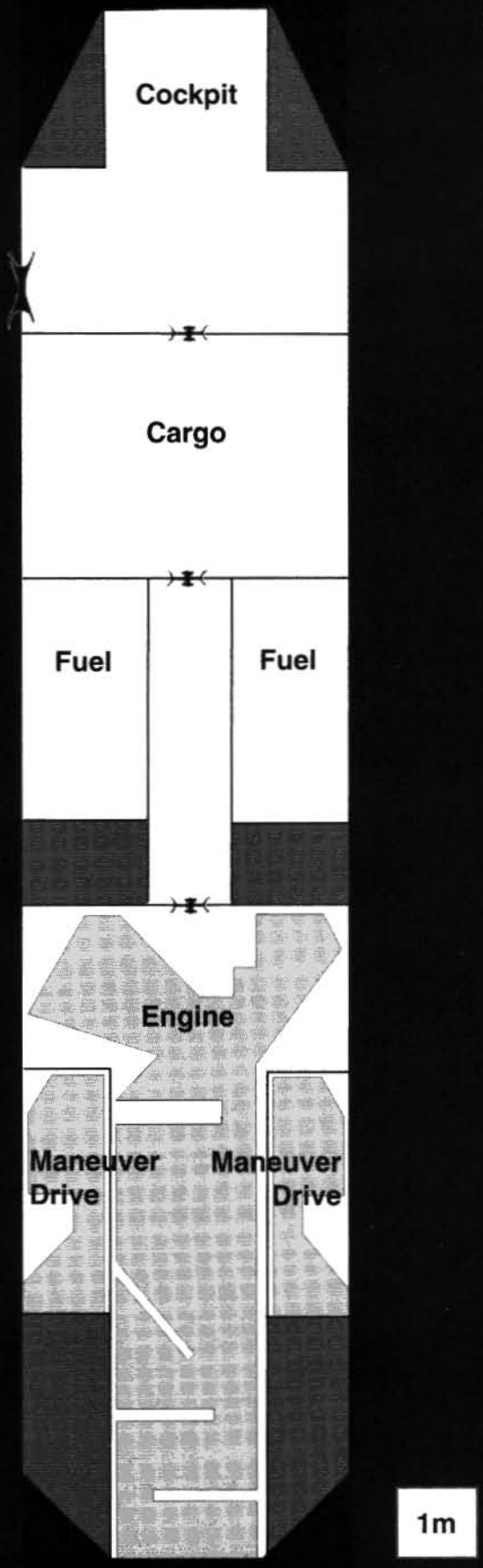
7 Size Rating
0 Fire Control Rating

0 Jump Rating
6 G Rating/ Maneuver Drive
6 Power Plant Rating
6.5 Fuel Rating/ Scoop/ Refine
0A 2P 0J Sensor Rating
0 Armor 6 Structure

Using a 30-ton hull, the ship's boat is capable of 6-G acceleration, carries 1.8 tons of fuel tankage, and has a crew of two. It is used mainly to move small cargo from planet surfaces into space and back again. It can be used as a small fighting ship when needed.



# Ships Boat


Cockpit
Cargo
Fuel
Fuel
Engine
Maneuver Drive
Maneuver Drive
1m

## Slow Boat

Tons: 30
Crew: 2
Cargo: 10

Volume: 420
Passengers High/Medium: 10
Controls: Civilian Standard

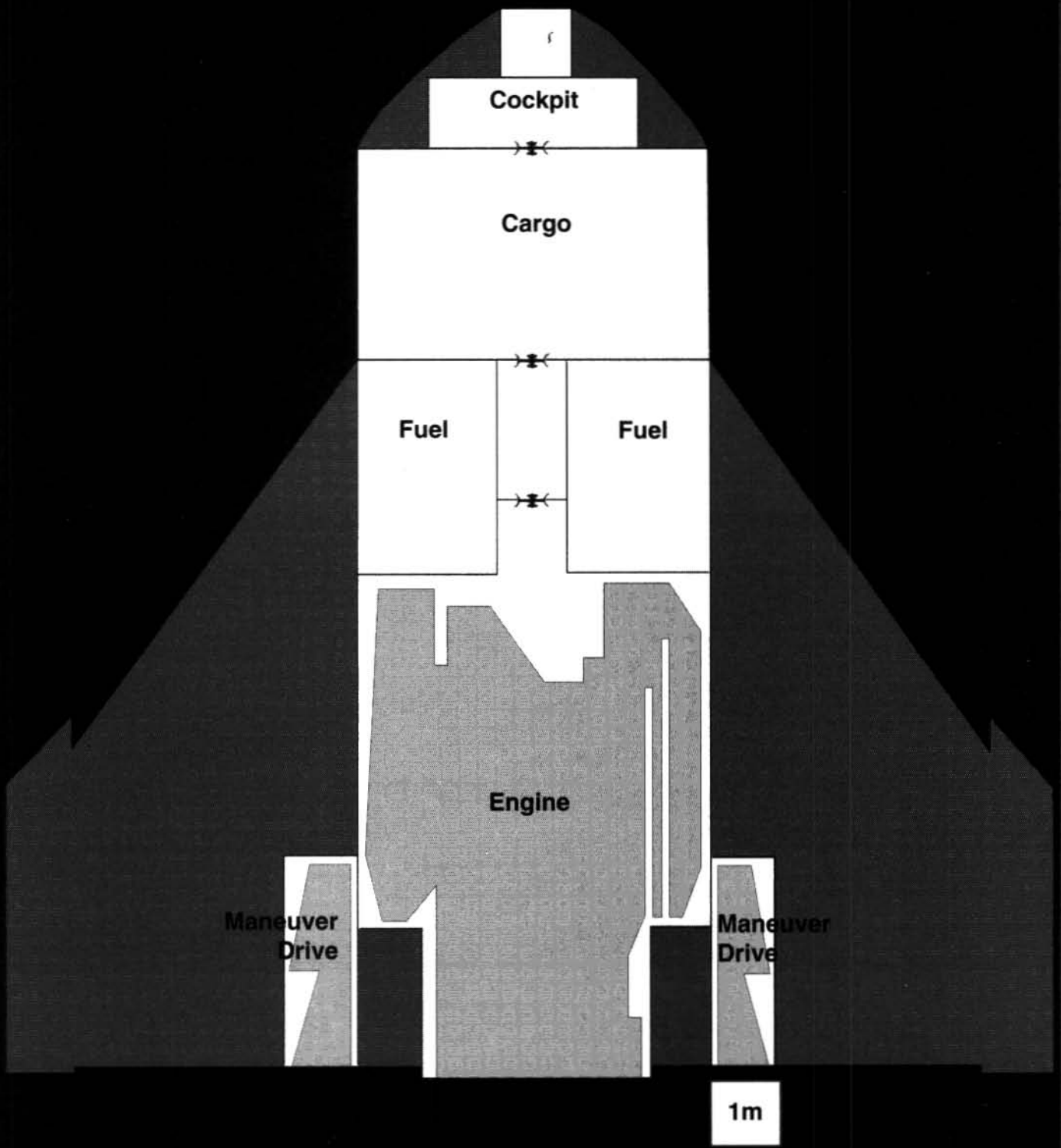
Cost in Mcr: 15
Passengers Low: 0
Tech Level: 9

7 Size Rating
0 Fire Control Rating

0 Jump Rating
3 G Rating
4 Power Plant Rating
6 Fuel Rating/ Scoop/ Refine
0A 2P 0J Sensor Rating
0 Armor 3 Structure

Using a 30-ton hull, the slow boat is capable of 3G acceleration, carries 1 ton of fuel tankage, and has a crew of two. It is used to move small cargo from ship to ship at or around a space platform.

# Slow Boat


Cockpit
Cargo
Fuel
Fuel
Engine
Maneuver Drive
Maneuver Drive
1m

## PINNACE

Tons: 40
Crew: 2
Cargo: 12

Volume: 560
Passengers High/Medium: 8
Controls: Civilian Standard

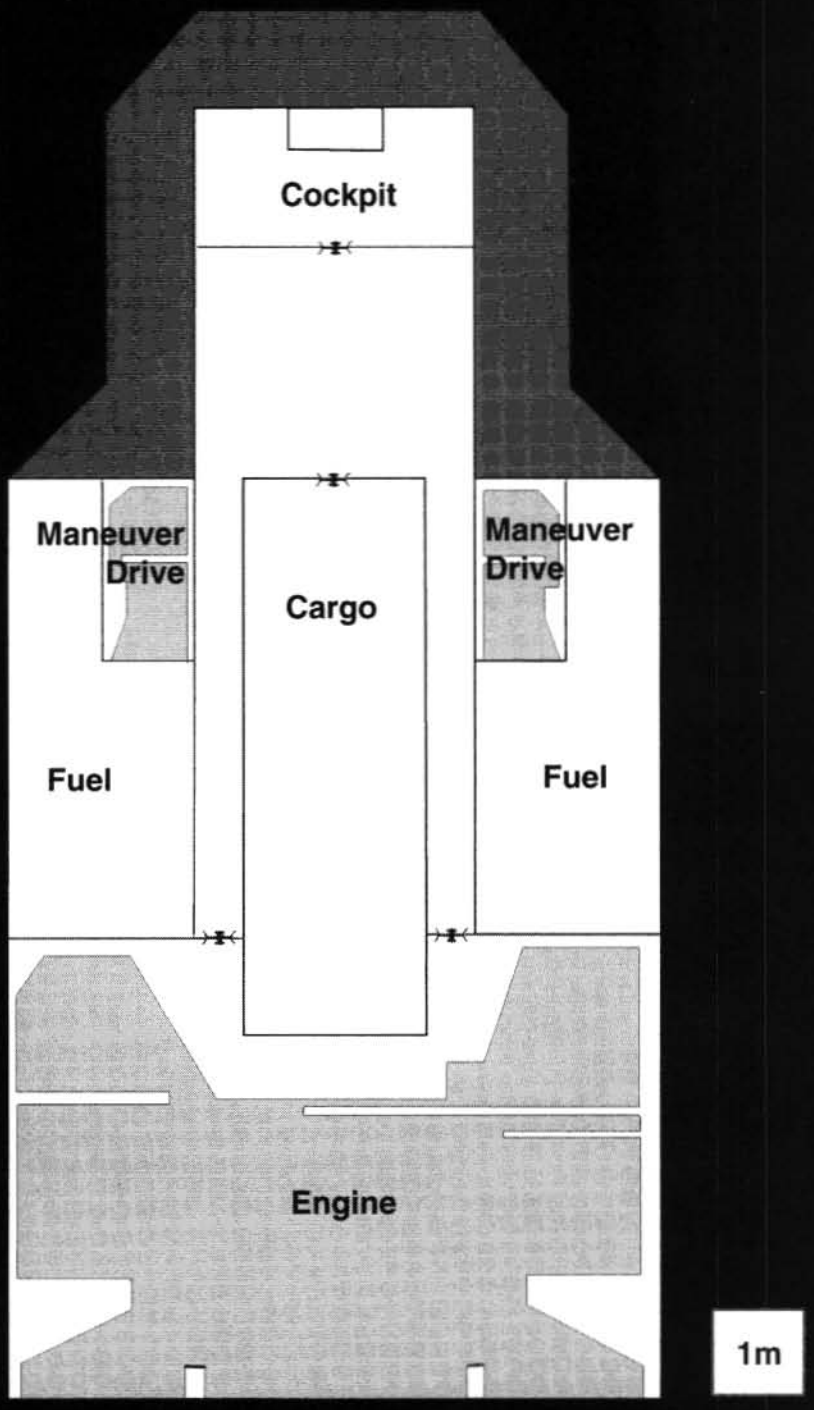
Cost in Mcr: 20
Passengers Low: 0
Tech Level: 9

7 Size Rating
0 Fire Control Rating

0 Jump Rating
5 G Rating
5 Power Plant Rating
8.4 Fuel Rating/ Scoop/ Refine
0A 2P 0J Sensor Rating
0 Armor 6 Structure

Using a 40-ton hull, the pinnace is capable of 5G acceleration, carries 2 tons of fuel, and has a crew of two. It is used to move passengers and large cargos between facilities and ships.

# PINNACE


Cockpit
Maneuver Drive
Maneuver Drive
Cargo
Fuel
Fuel
Engine
1m

## Slow Pinnace

Tons: 50
Crew: 5
Cargo: 12.6

Volume: 700
Passengers High/Medium: 5
Controls: Civilian Standard

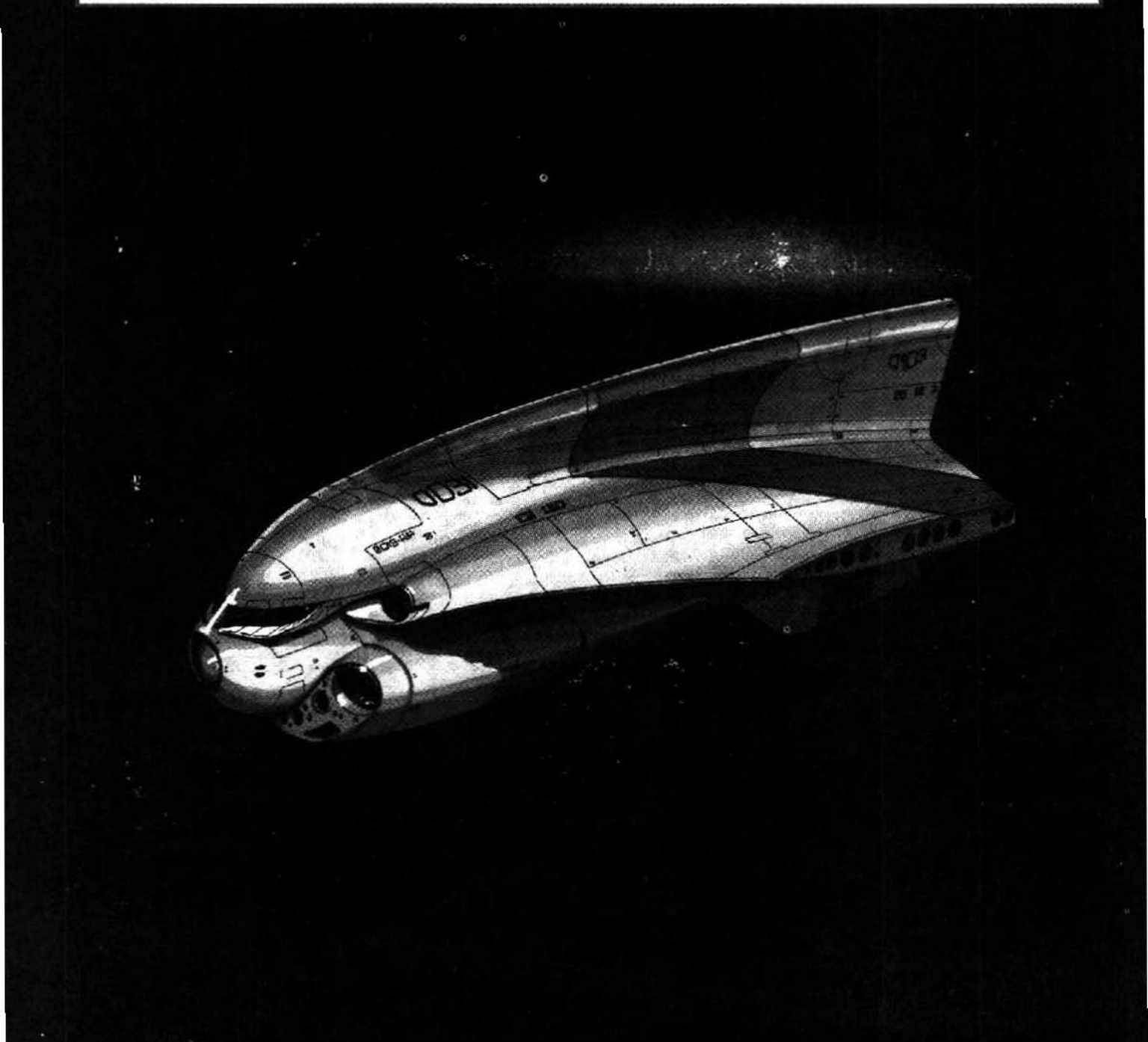
Cost in Mcr: 46.2
Passengers Low: 0
Tech Level: 11

7 Size Rating
0 Fire Control Rating
L Battery 1 - 1, 0, 0, 0

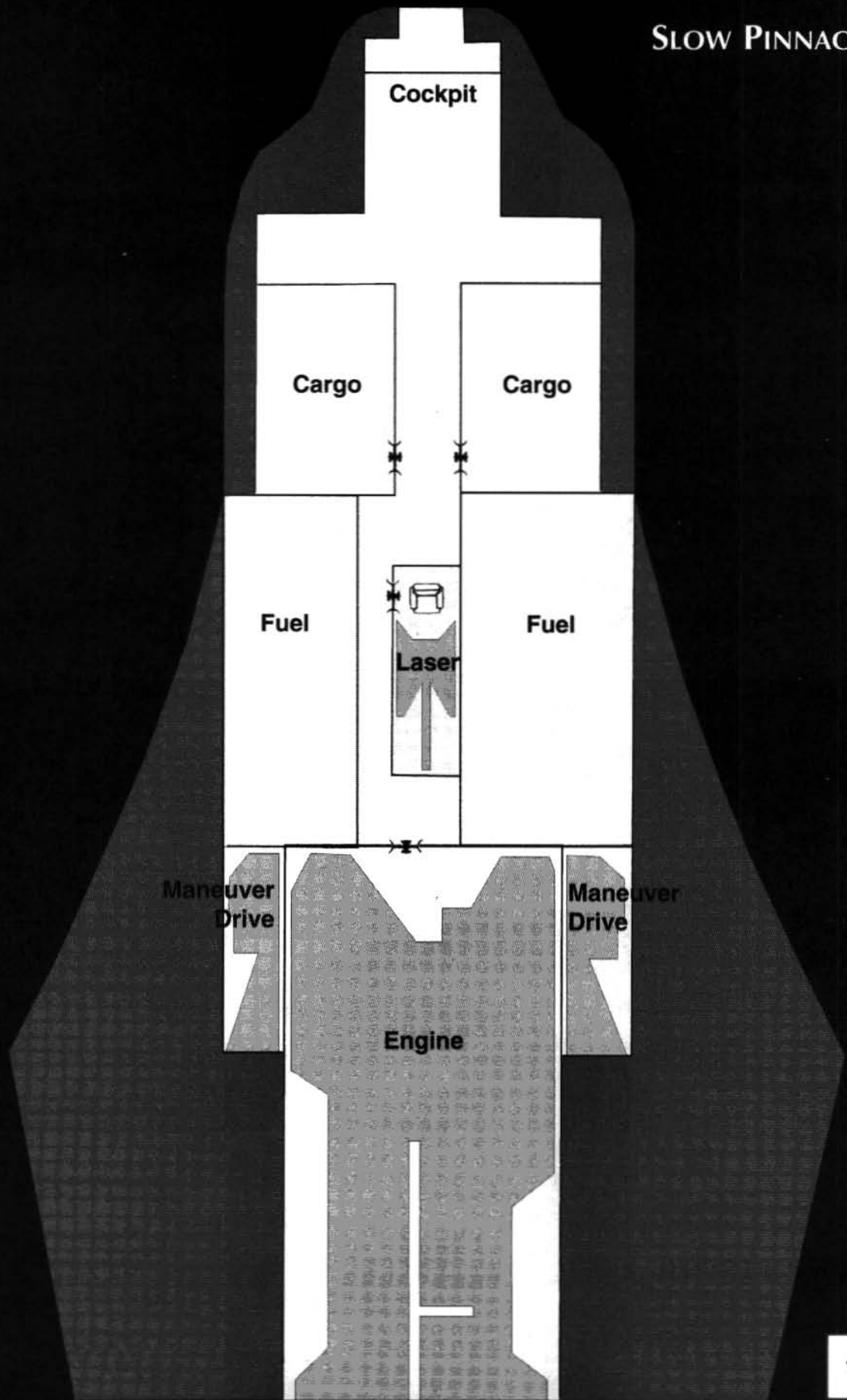
0 Jump Rating
2 G Rating / HEPlaR
2 Power Plant Rating
15 Fuel Rating
0A 2P 0J Sensor Rating
0 Armor 3 Structure

Chief Naval Architect: Peter Miller

The Slow Pinnace is an armed version of the Pinnace and is used mainly by armed or military vessels. VIPs are usually shuttled in Slow Pinnaces because it is armed and has enough capacity to handle most sensitive cargoes. The design uses HEPlaR engines mainly due to its original pre-Imperial design criteria. Newer versions, however, are using Thruster Plates for use with long range ships.



# Slow Pinnace



## Modular Cutter

Tons: 50
Crew: 2
Cargo: 15

Volume: 700
Passengers High/Medium: 12
Controls: Civilian Standard

Cost in Mcr: 28
Passengers Low: 0
Tech Level: 9

7 Size Rating
0 Fire Control Rating

0 Jump Rating
4 G Rating/ Maneuver Drive
4 Power Plant Rating
13.5 Fuel Rating/ Scoop/ Refine
0A 2P 0J Sensor Rating
0 Armor 6 Structure

Chief Naval Architect: Lewis Roberts

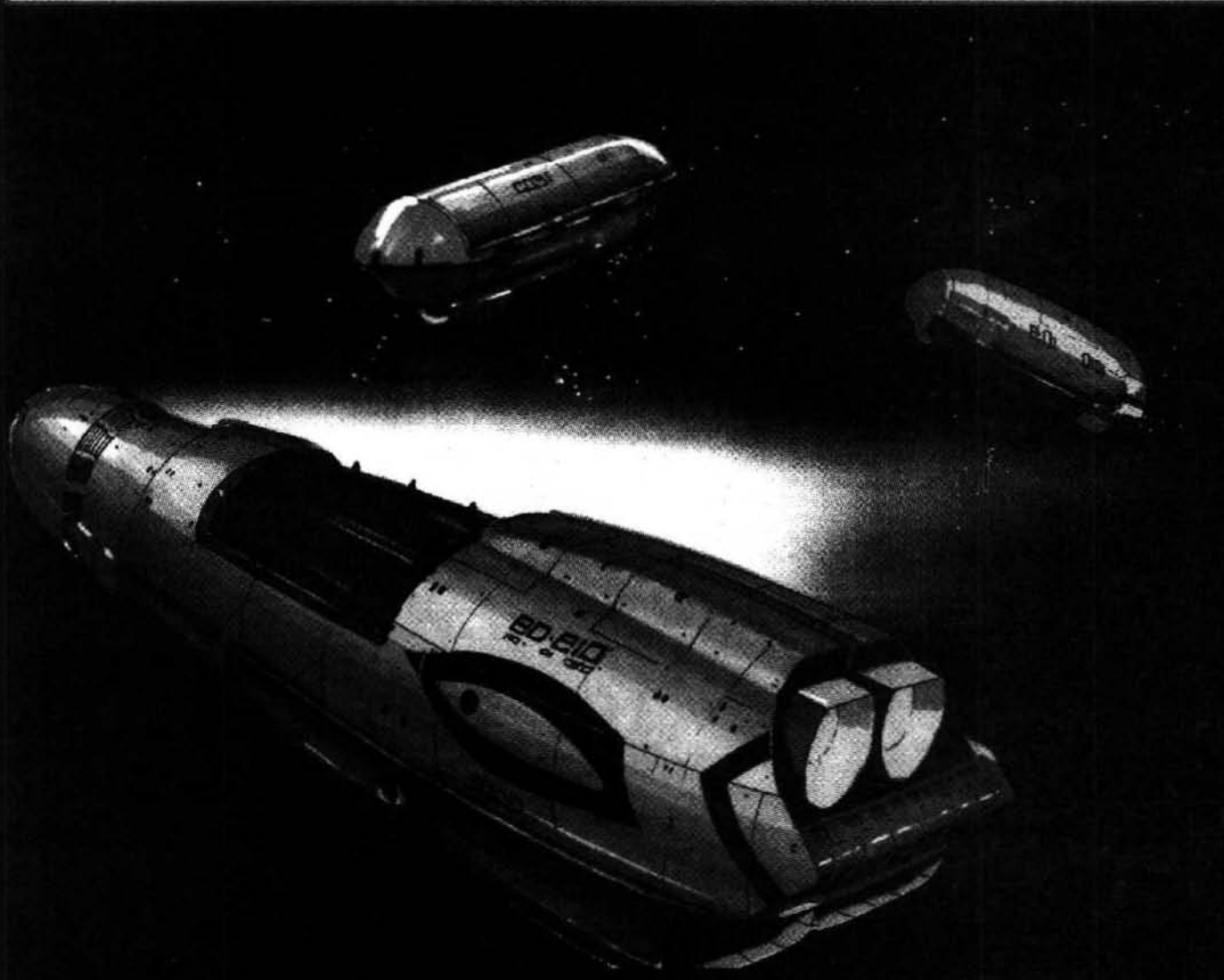
Using a 50-ton hull, the cutter is capable of 4G, carries 2 tons of fuel, and has a crew of two. It has 30 tons committed to special detachable modules; the craft has 2.5 tons excess space available for weaponry or ancillary items.

Three interchangeable modules are routinely available for the modular cutter:

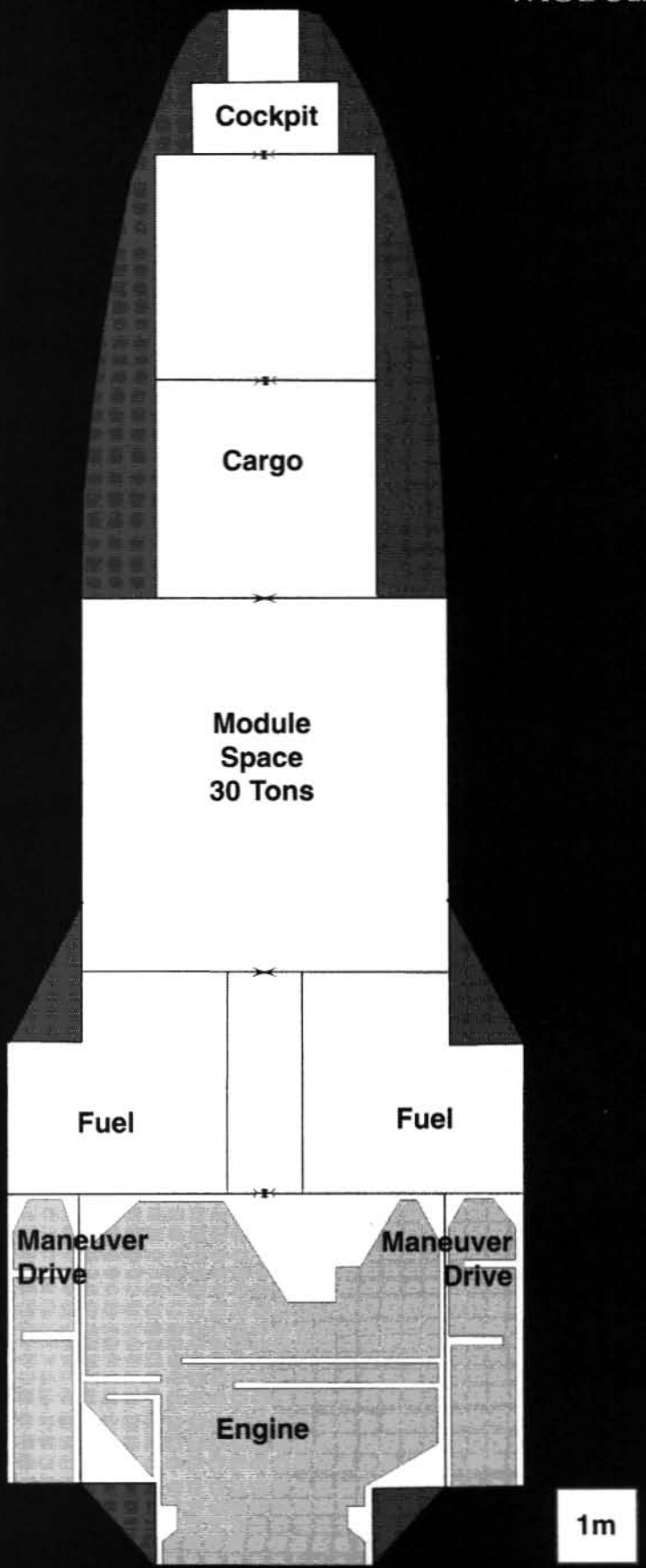
The **ATV module** (which includes an operational ATV) is 30 tons. It can land (and retrieve) an ATV on a world surface. The module can serve as an ATV storage location, if desired.

The **fuel module**, with 30 tons of fuel tankage, serves as a fuel skimming vehicle and storage tank.

The **open module** is a customizable frame with 30 tons of excess space, which can be allocated to passenger seating, fuel, cargo, cabin, or staterooms.



# Modular Cutter



## SHUTTLE

Tons: 100
Crew: 2
Cargo: 71

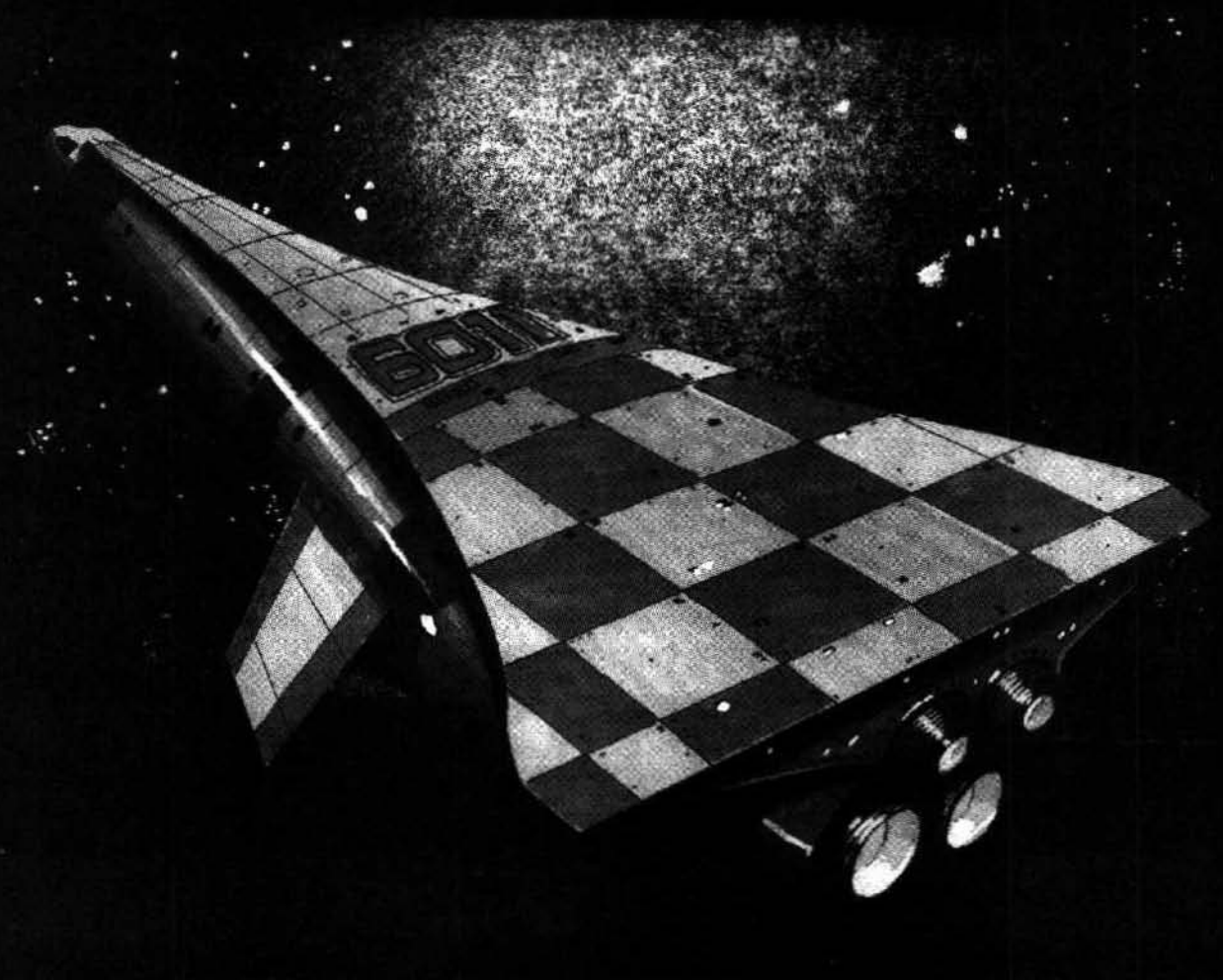
Volume: 1400
Passengers High/Medium: 10
Controls: Civilian Standard

Cost in Mcr: 18
Passengers Low: 0
Tech Level: 8

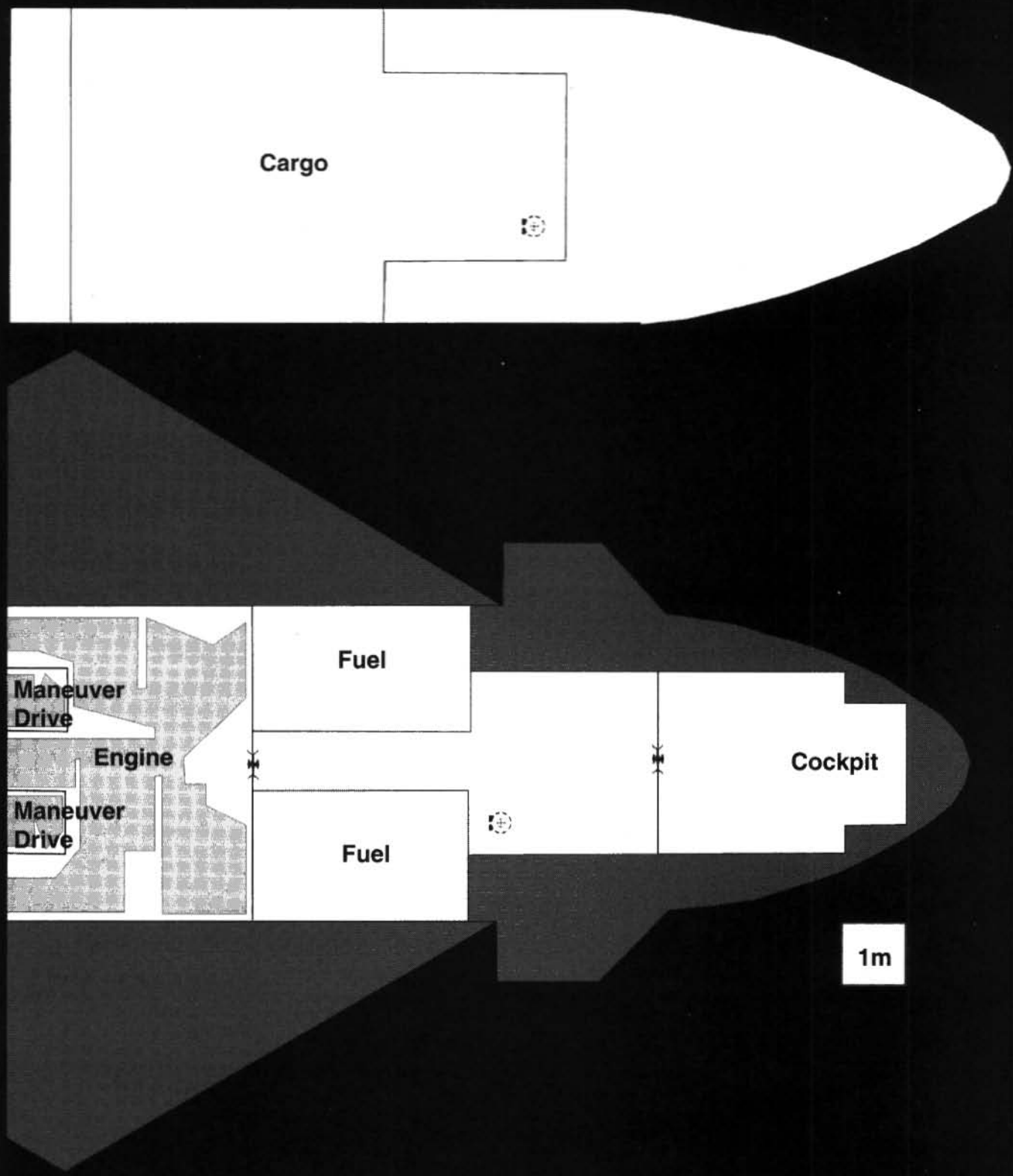
8 Size Rating
0 Fire Control Rating

0 Jump Rating
3 G Rating
4 Power Plant Rating
15 Fuel Rating/ Scoop/ Refine
0A 2P 0J Sensor Rating
0 Armor 8 Structure

Using a 100-ton hull, the shuttle is capable of 3G acceleration, carries 2.85 tons of fuel, and has a crew of two. It is the prime mover of material from space to a planet's surface and vice versa. Before TL12, the shuttle was the smallest effective space-worthy vessel.



# Shuttle


Cargo
Fuel
Maneuver Drive
Engine
Maneuver Drive
Fuel
Cockpit
1m

## Gig

Tons: 20
Crew: 3
Cargo: 1

Volume: 280
Passengers High/Medium: 0
Controls: Civilian Standard

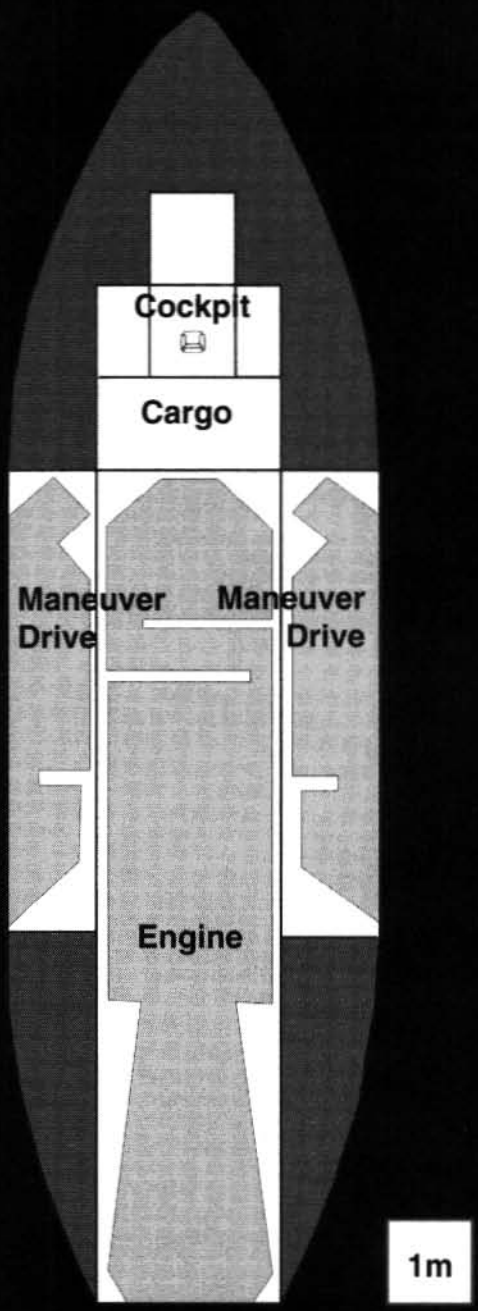
Cost in Mcr: 22
Passengers Low: 1 Emerg
Tech Level: 12

7 Size Rating
0 Fire Control Rating
L Battery 1 - 1, 0, 0, 0

0 Jump Rating
3 G Rating/ Thruster (T Plates)
5 Power Plant Rating
0.5 Fuel Rating/ Scoop/ Refine
1A 3P 0J Sensor Rating
2 Armor 6 Structure

The 20-ton Gig is a small, armed, light craft designed to be carried by other larger ships. It can take the place of small craft when an armed and slightly armored boat is more practical. The gig has proven to be especially useful in mail deliveries and important small-cargo transfers.

# Gig



## Scout/ Courier

Tons: 100
Crew: 1
Cargo: 12.9

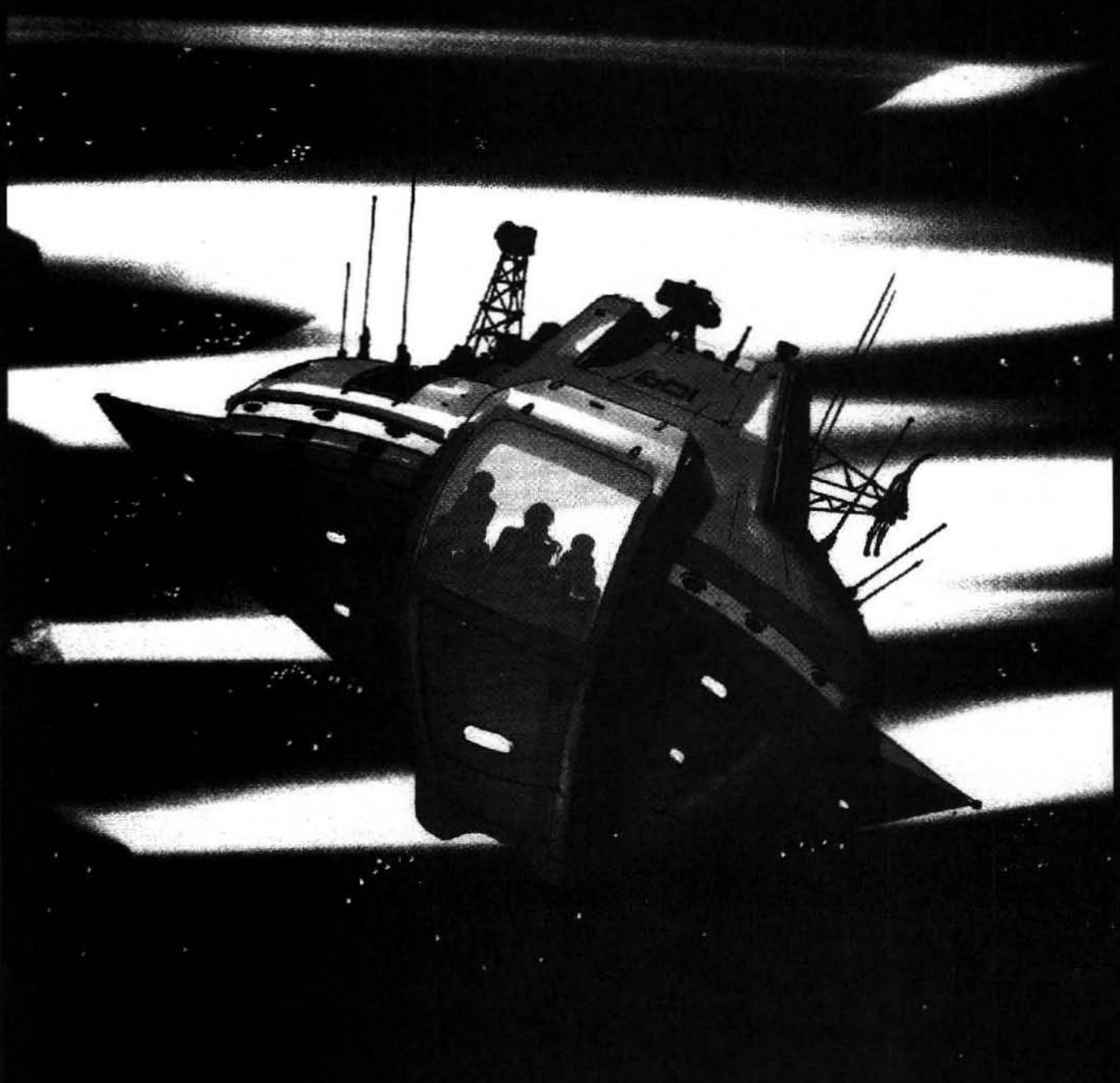
Volume: 1400
Passengers High/Medium: 3
Controls: Military Standard

Cost in Mcr: 21.75
Passengers Low: 0
Tech Level: 12

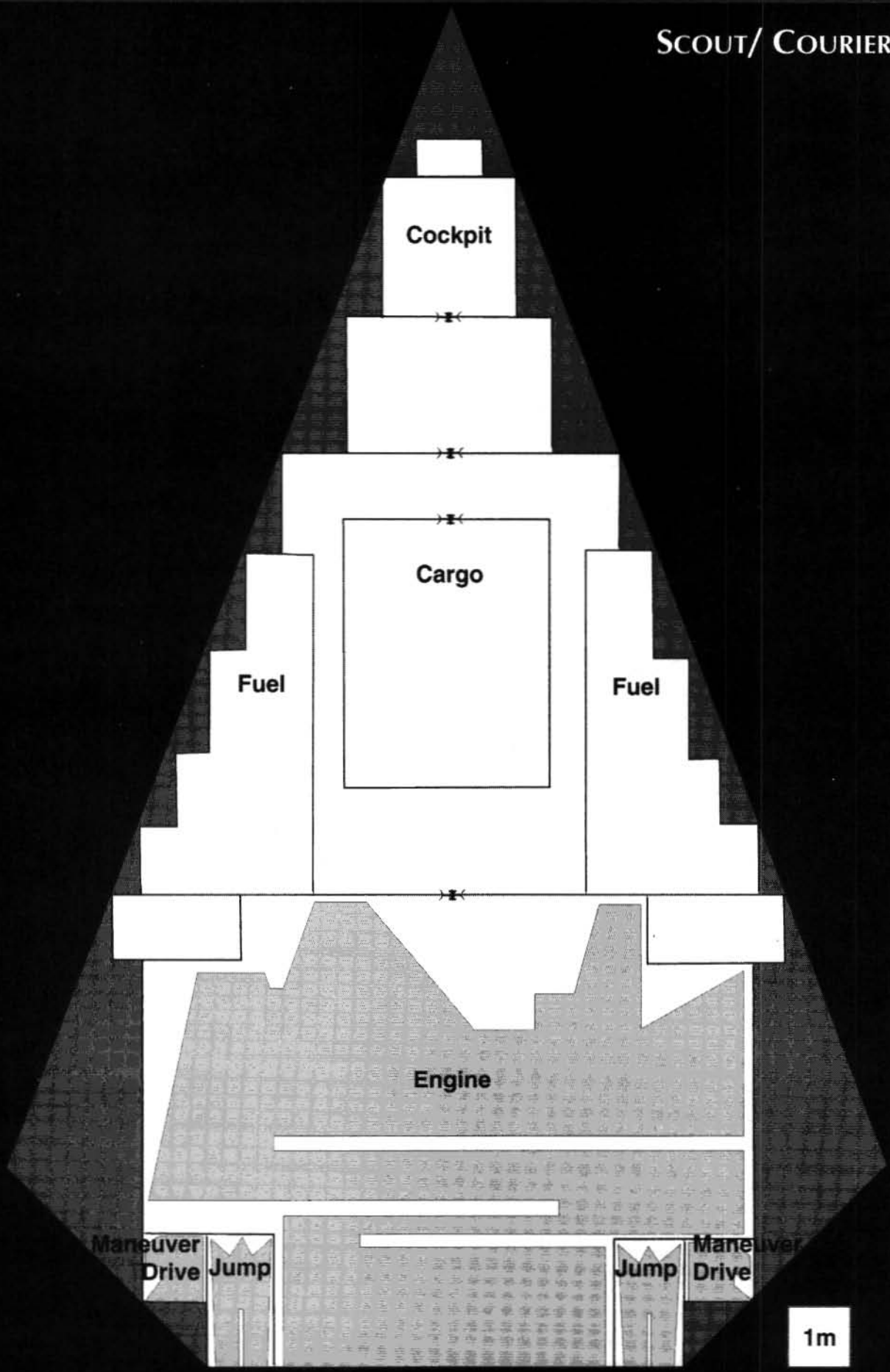
8 Size Rating
0 Fire Control Rating

2 Jump Rating
2 G Rating
3 Power Plant Rating
20.7 Fuel Rating/ Scoop/ Refine
2A 3P 0J Sensor Rating
10 Armor 6 Structure

Using a 100-ton hull, the scout/courier is intended for exploration, survey, and courier duties, with many in service throughout known space. It is used when a ship of long-range duration and high sensor capabilities is needed. The ship is fast, and capable of operating for months without returning to a base or home planet.



# Scout/ Courier



## Luxury Liner

Tons: 5,000
Crew: 185
Cargo: 12

Volume: 70,000
Passengers High/Medium: 514
Controls: Civ Std/ Bridge

Cost in Mcr: 1392.6
Passengers: Low 0
Tech Level: 11

9 Size Rating
3 Fire Control Rating
L Battery - 8, 4, 2, 1

2 Jump Rating
1 G Rating
3 Power Plant Rating
1000 Fuel Rating
05(24) Sand Caster Rating
4A 4P 0J Sensor Rating
0 Armor 22 Structure

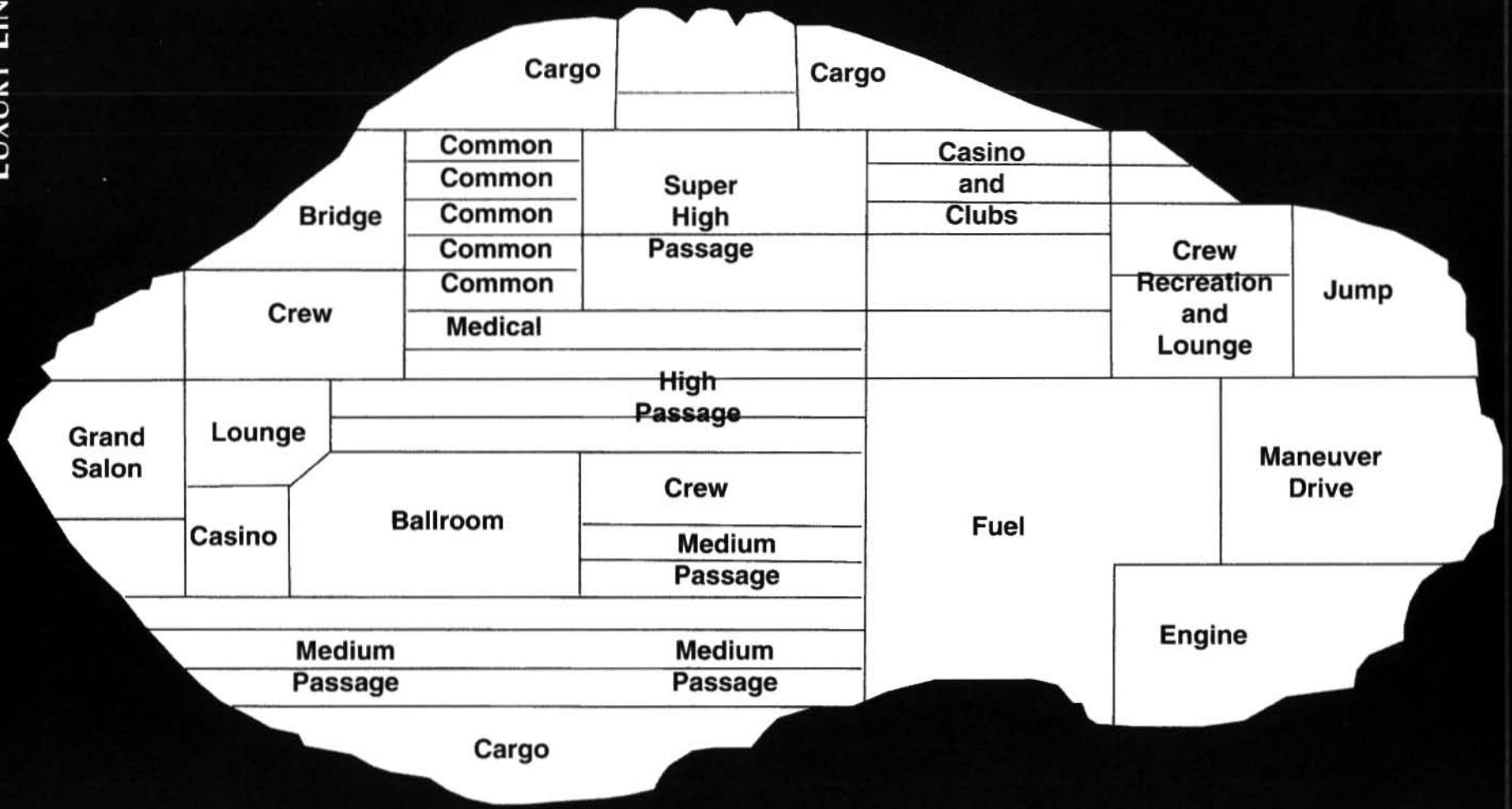
Shuttle.

Chief Naval Architect: Lewis Roberts

The Royal Class of liners is designed with luxury in mind. It is how the nobles and the super rich of the new Imperium travel the stars. The Royal is outfitted with every conceivable luxury: a Grand Ballroom with one of the finest Sylean-style chamber orchestras (42 piece) in the sector; a high rollers casino, where the wealthy can try to become even wealthier; sports center with a small swimming pool and variable gravity weight lifting equipment; the finest original holo-movies, shown each night in the Grand Salon; twenty of the finest chefs from the Imperium create masterpieces of culinary delight each and every night; an excellent sickbay with expert physicians in case of medical emergency. In addition, the entire staff is highly trained and taught how to deal with the rich and famous with the utmost of discretion.

- The Royal class has 414 standard high passage rooms, plus 100 luxury suites that have twice the space, and passengers are even more pampered than the other guests.
- The ship carries a shuttle craft to load and unload passengers. Each ship is named for members of the Imperial Family, and several of the Emperor's nieces have traveled on a Royal liner, and have raved about their stay. More members of the Imperial family are expected to take a cruise soon.
- Each Royal ship is equipped with a state-of-art defense grid, and all members of the staff are cross-trained in security matters, so as to be able assure passengers' safety.

# Luxury Liner



## FREE TRADER

Tons: 200
Crew: 4
Cargo: 75.9

Volume : 2800
Passengers High/Medium: 6
Controls: Civilian Standard

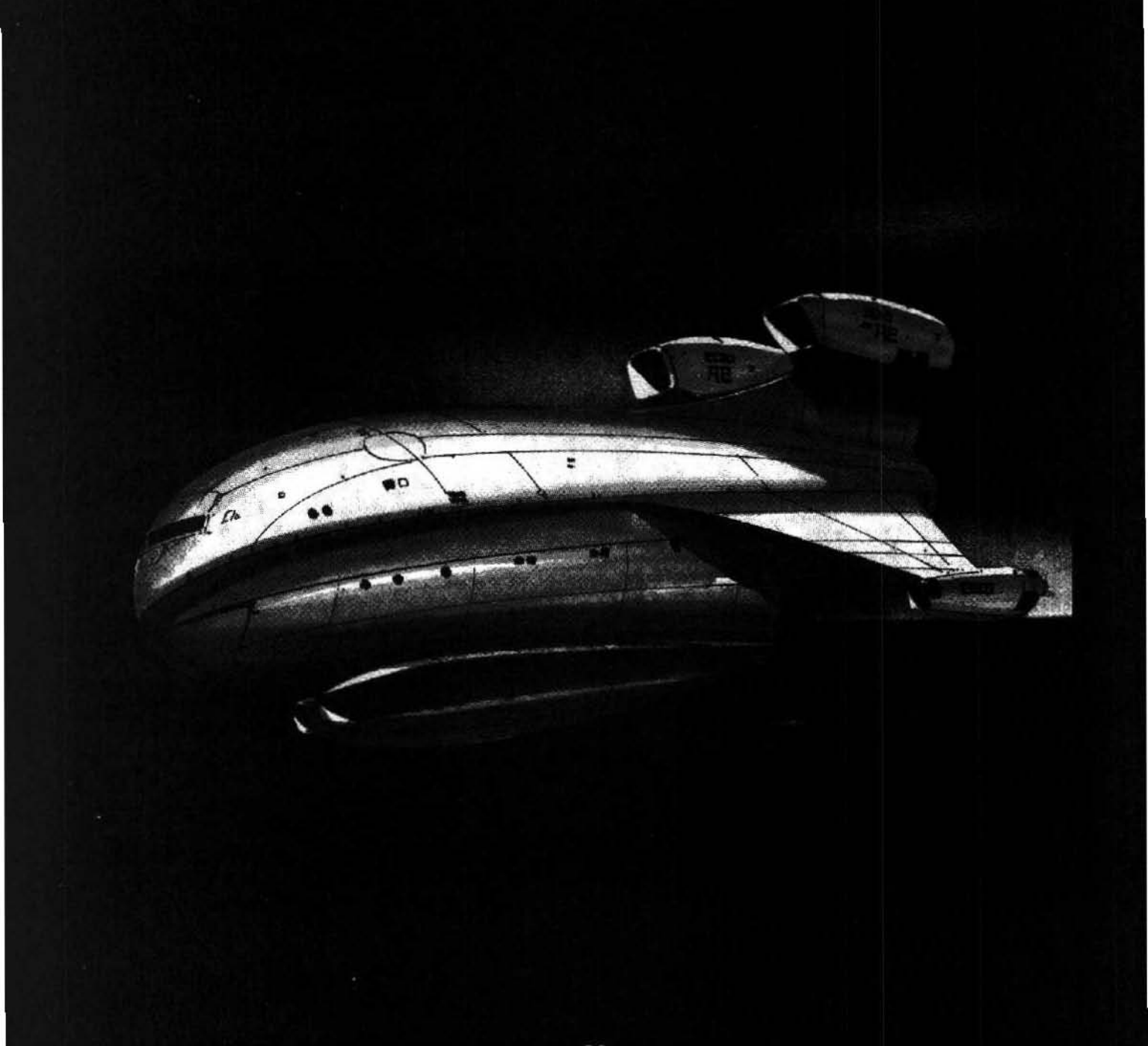
Cost in Mcr: 30.75
Passengers Low: 20
Tech Level: 12

8 Size Rating
0 Fire Control Rating
2xL Batteries - 2, 0, 0, 0

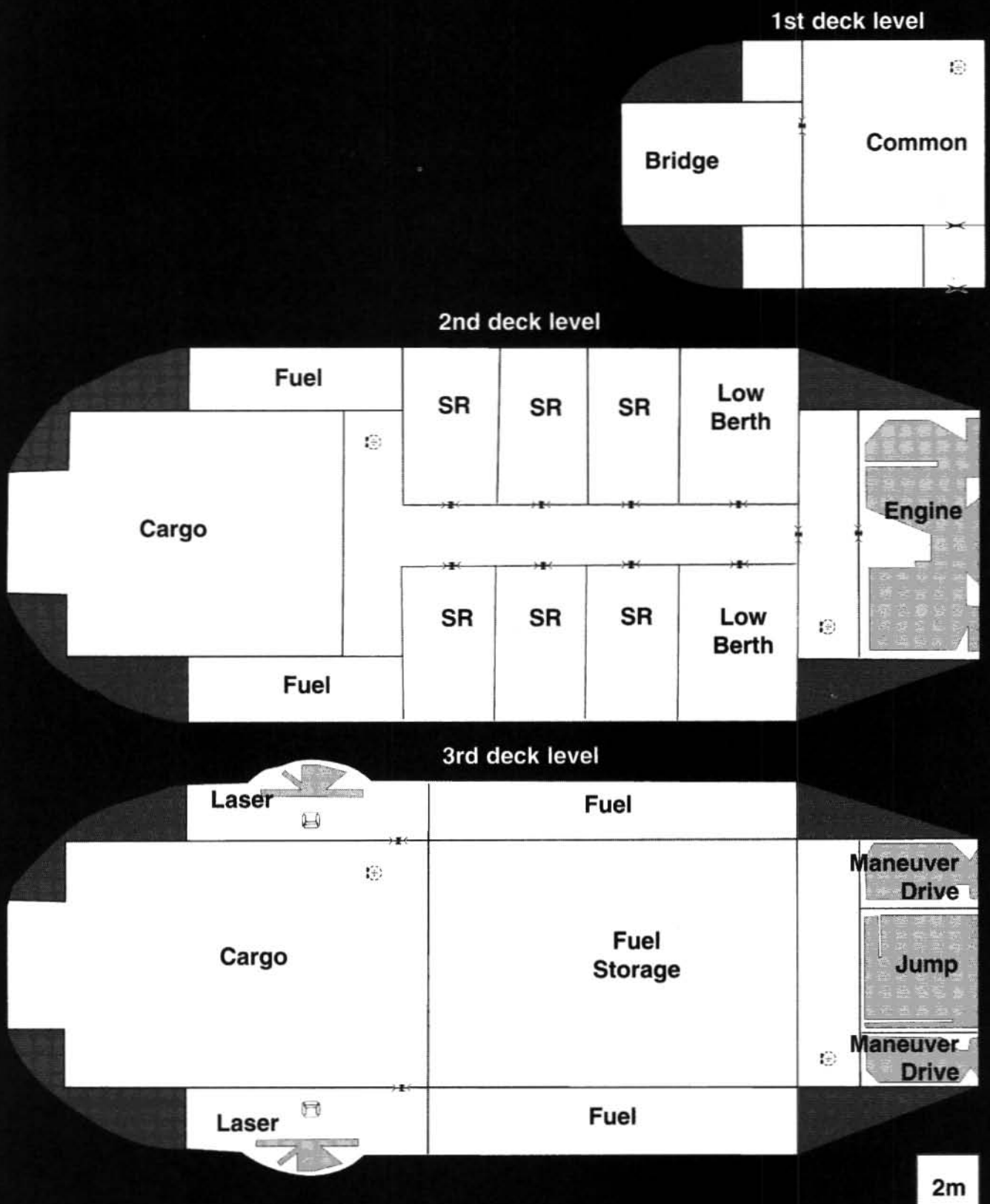
1 Jump Rating
1 G Rating /Thruster
20.7 Power Plant Rating
50 Fuel Rating/ Scoop/ Refine
1A 3P 0J Sensor Rating
0 Armor 6 Structure

Chief Naval Architect: Joe Walsh

Using a 200-ton hull, the free-trader is an elementary interstellar merchant ship, carrying cargo and passengers. It is the primary trade and passenger mover in the Imperium. Other civilizations have similar designs for the same purpose. It has the capability of entering atmospheres, making it good for service to planets without orbital platforms or stations.



# Free Trader


1st deck level
Bridge
Common
2nd deck level
Fuel
SR
SR
SR
Low Berth
Cargo
Engine
SR
SR
SR
Low Berth
Fuel
3rd deck level
Laser
Fuel
Maneuver Drive
Cargo
Fuel Storage
Jump
Maneuver Drive
Laser
Fuel
2m

## Far Trader

Tons: 200
Crew: 5
Cargo: 34

Volume: 2800
Passengers High/Medium: 7
Controls: Civilian with Bridge

Cost in Mcr: 84.6
Passengers Low: 4
Tech Level: 11

8 Size Rating
0 Fire Control Rating
2xL Batteries - 2, 0, 0, 0

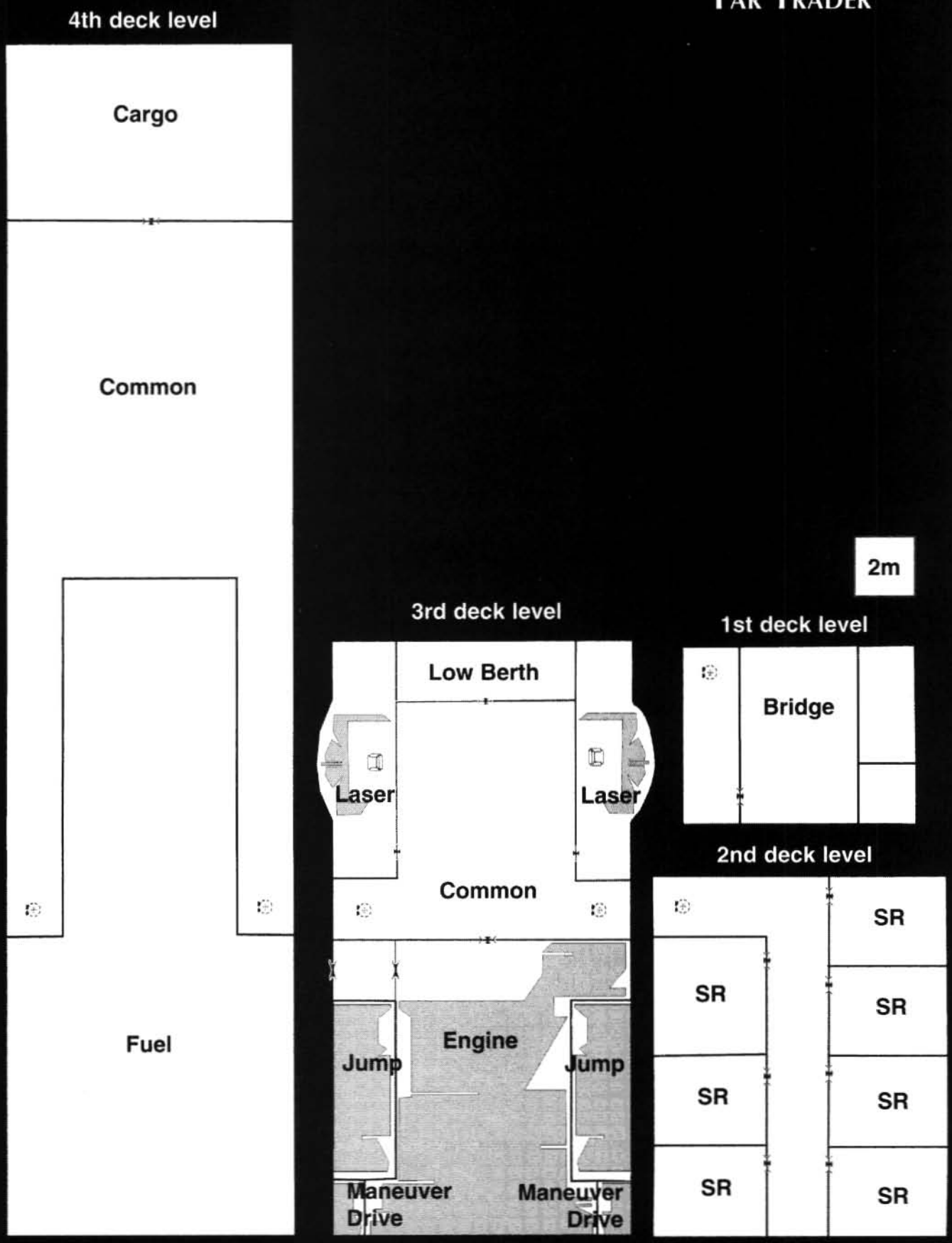
2 Jump Rating
1 G Rating / HEPlaR
5 Power Plant Rating
50 Fuel Rating
0A 2P 0J Sensor Rating
0 Armor 6 Structure

Chief Naval Architect: Joe Walsh

The Far Trader is a popular design used by longer ranged shipping companies and commercially aggressive ship captains. The maintenance cost is kept low for the standard haul, ensuring the design's profitability well into the future. The two laser batteries ensure that pirates will have a second thought before attempting to board a Free Trader.

Far Traders have enjoyed more success since the founding of the Imperium, because of the demand for goods and materials from outside of Imperial space.

# Far Trader


4th deck level
Cargo
Common
Fuel
2m
3rd deck level
Low Berth
Laser
Laser
Common
Jump
Engine
Jump
Maneuver Drive
Maneuver Drive
1st deck level
Bridge
2nd deck level
SR
SR
SR
SR
SR
SR
SR
SR

## SECURE TRADER

Tons: 200
Crew: 10
Cargo: 44

Volume: 2800
Passengers High/Medium: 7
Controls: Civilian with Bridge

Cost in Mcr: 88.1
Passengers Low: 0
Tech Level: 12

8 Size Rating
4 Fire Control Rating
2xL Batteries - 3, 2, 0, 0

2 Jump Rating
2 G Rating / HEPlaR
2 Power Plant Rating
41 Fuel Rating
2A 3P 0J Sensor Rating
40 Armor 12 Structure

Chief Naval Architect: Joe Walsh

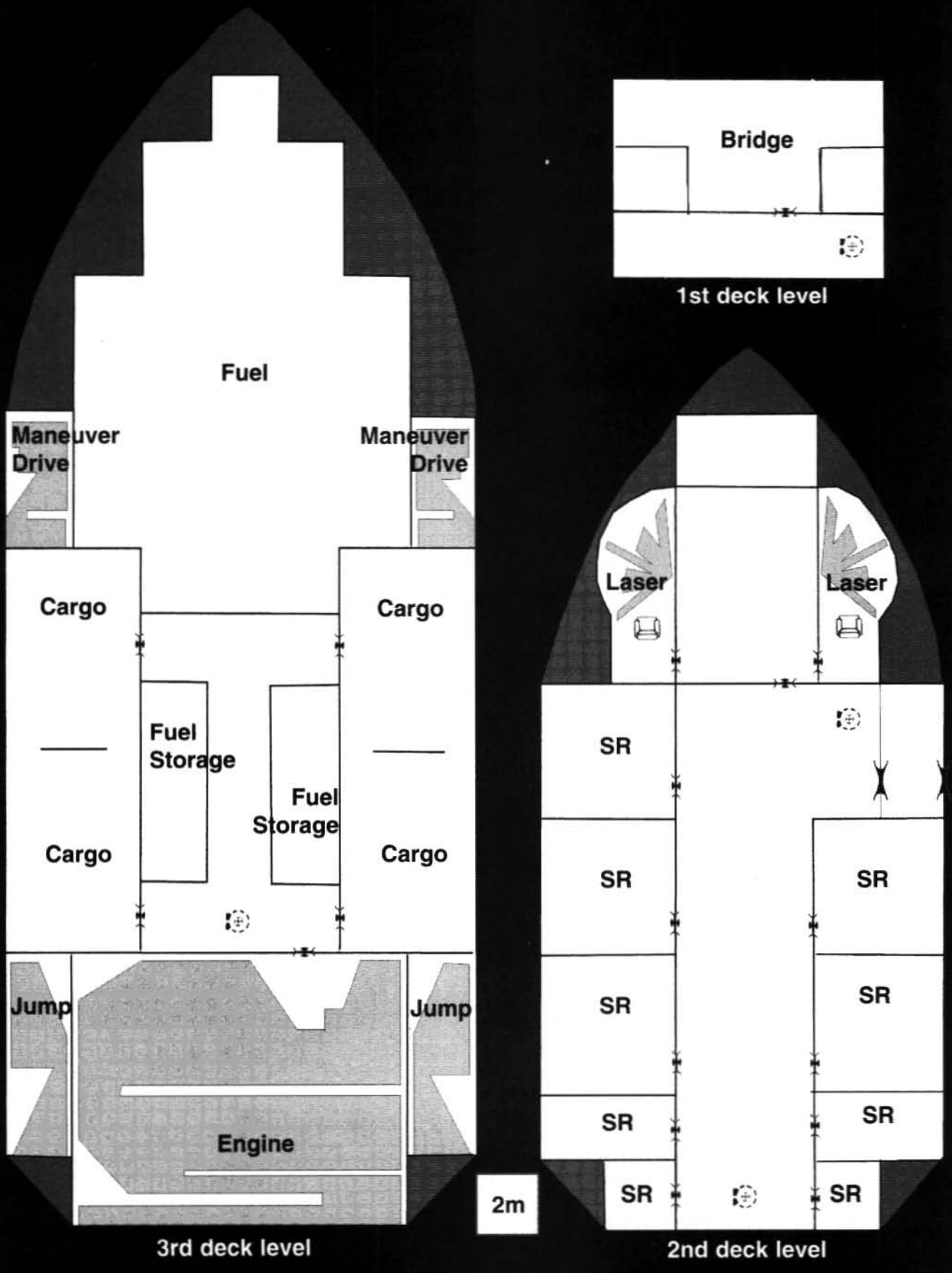
The Secure Trader is designed to transport goods and individuals to and from hostile areas, as well as transporting goods and individuals that have a high probability of attracting hostile attention. Since a much higher price can be commanded for such transportation, this Trader is capable of making a profit for its owner in spite of the higher price in comparison with the more commonly used Far Trader.

The main causes of the high price of this ship are the weaponry and the hull, both of which exceed the standards for trading vessels. However, they also allow the Secure Trader to survive in situations that would destroy a standard Far Trader.

While the small staterooms have been designed with the crewmembers in mind (excepting the Captain), travellers experienced with this sort of ship have found it sometimes necessary to have the crew double-up in large staterooms because a passenger's social sensibilities require that his or her retinue use the smaller accommodations. With eight large staterooms and nine small staterooms available, it is possible to set up many different lodging arrangements to please even the most discriminating passenger. In addition, if no high passengers are available at a given port, the Captain can always sell middle passage and leave the high passage staterooms for the crew.

Not every Traveller will desire a Secure Trader, but for those who have a true sense of adventure, it can bring rewards rarely seen by the timid captains of standard trading vessels.

# Secure Trader



## Subsidized Merchant

Tons: 400
Crew: 5
Cargo: 207.9

Volume: 5600
Passengers High/Medium: 10
Controls: Civilian Standard

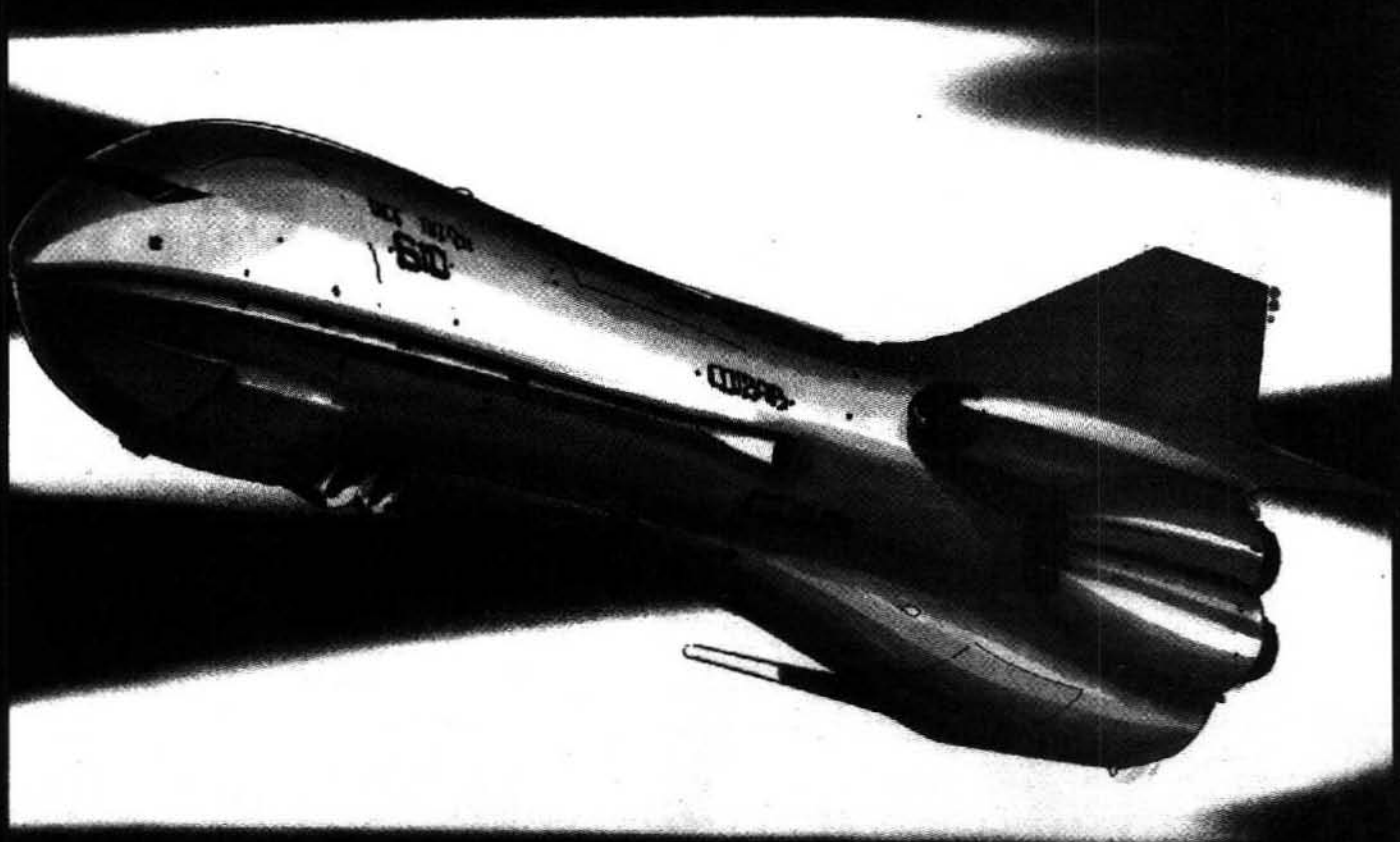
Cost in Mcr: 49.728
Passengers Low: 10
Tech Level: 12

8 Size Rating
0 Fire Control Rating

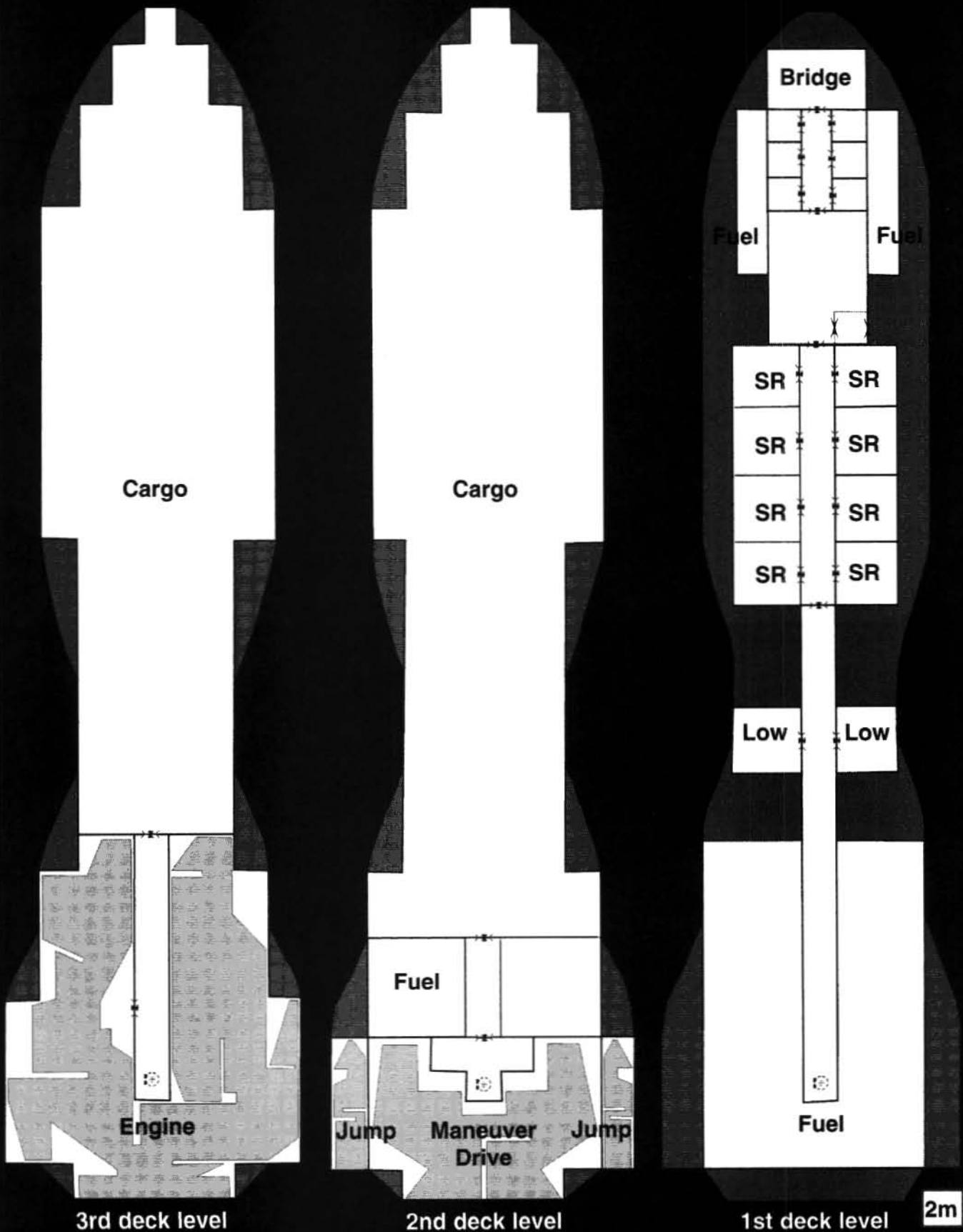
1 Jump Rating
1 G Rating/ Thruster
1 Power Plant Rating
51.3 Fuel Rating/ Scoop/ Refine
1A 3P 0J Sensor Rating
0 Armor 8 Structure

Chief Naval Architect: Joe Walsh

Using a 400-ton hull, the subsidized merchant is a trading vessel intended to meet the commercial needs of clusters of worlds. The ship has an impressive amount of cargo and passenger capacity, but its short range takes it out of far-space operations. It has the capability of entering atmospheres, making it good for service to planets without orbital platforms or stations.



# Subsidized Merchant



## Subsidized Liner

Tons: 600
Crew: 9
Cargo: 129

Volume: 8400
Passengers High/Medium: 21
Controls: Civilian Standard

Cost in Mcr: 236.97
Passengers Low: 20
Tech Level: 12

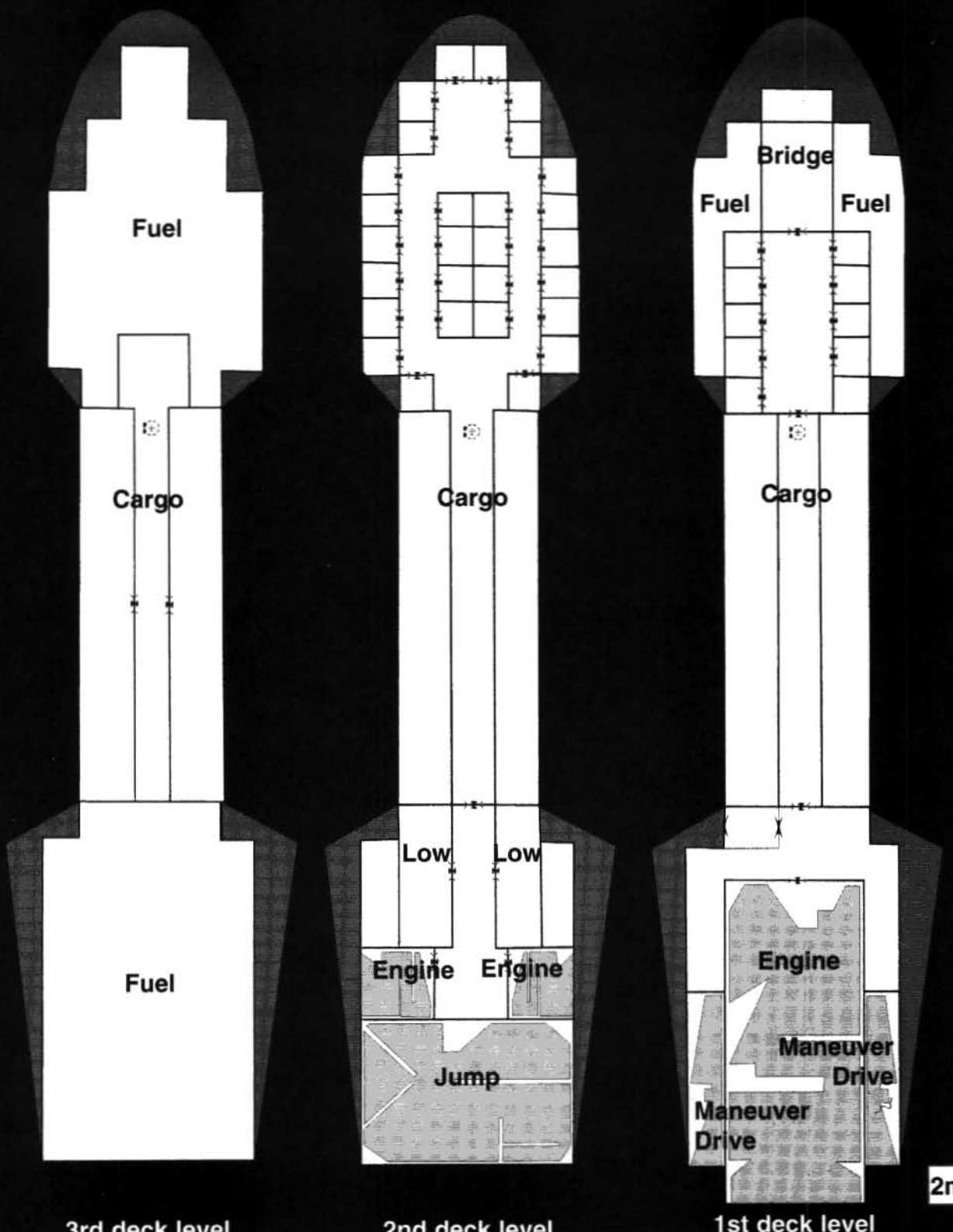
8 Size Rating
0 Fire Control Rating

3 Jump Rating
1 G Rating
3 Power Plant Rating
210 Fuel Rating
0A 2P 0J Sensor Rating
0 Armor 10 Structure

Launch

The Subsidized Liner is the government's current answer to the problem of not having enough passenger service between Imperial planets. The large ship has a good passenger capacity, and is able to maintain a high quality of service within normal shipping lanes. The ship is capable of longer range, and several have been used in extra-Imperial runs, but these have been relatively few and far between.

# Subsidized Liner



## YACHT

Tons: 200
Crew: 4
Cargo: 19.9

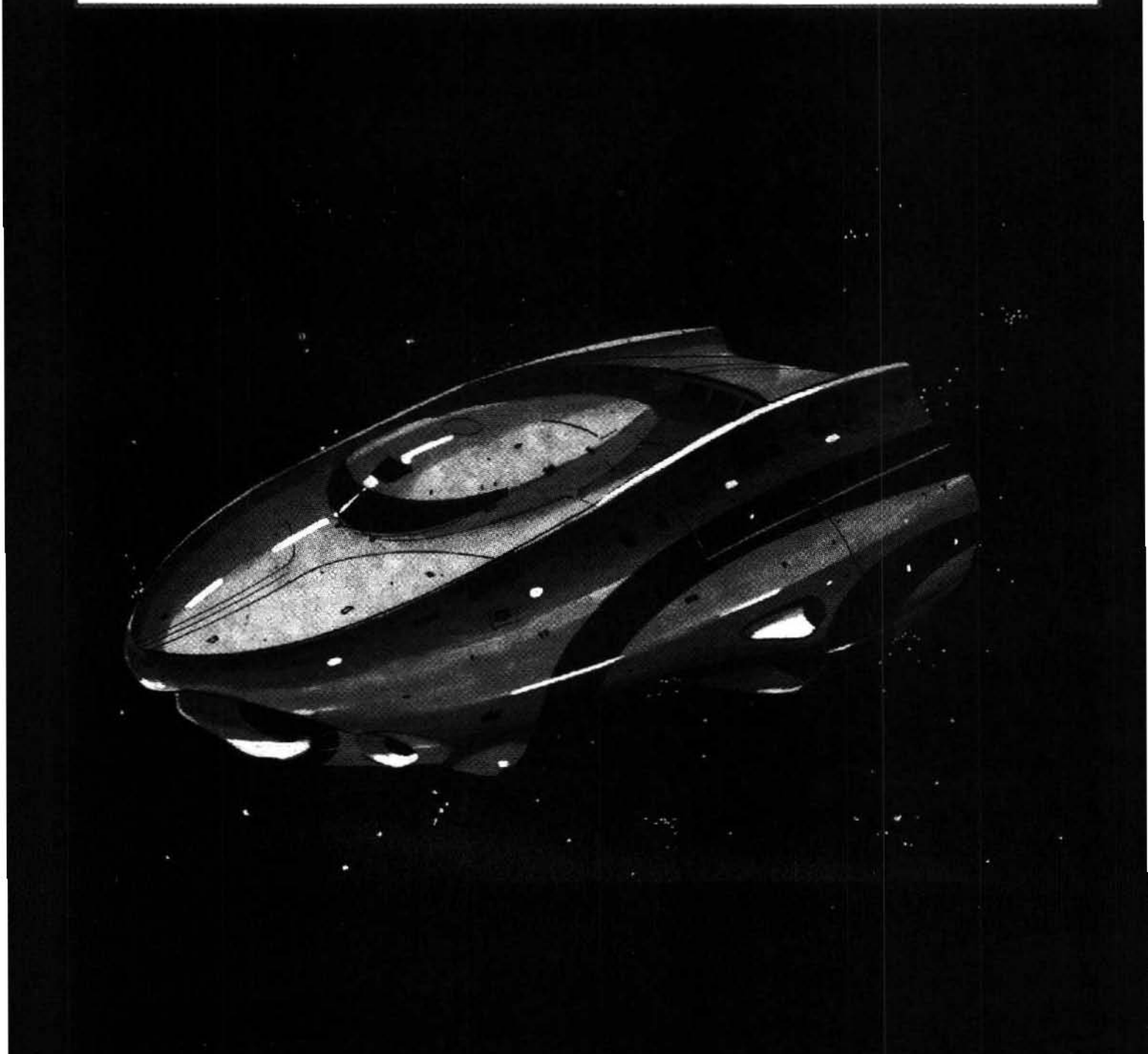
Volume: 2800
Passengers High/Medium: 10
Controls: Civilian Standard

Cost in Mcr: 33.252
Passengers Low: 0
Tech Level: 12

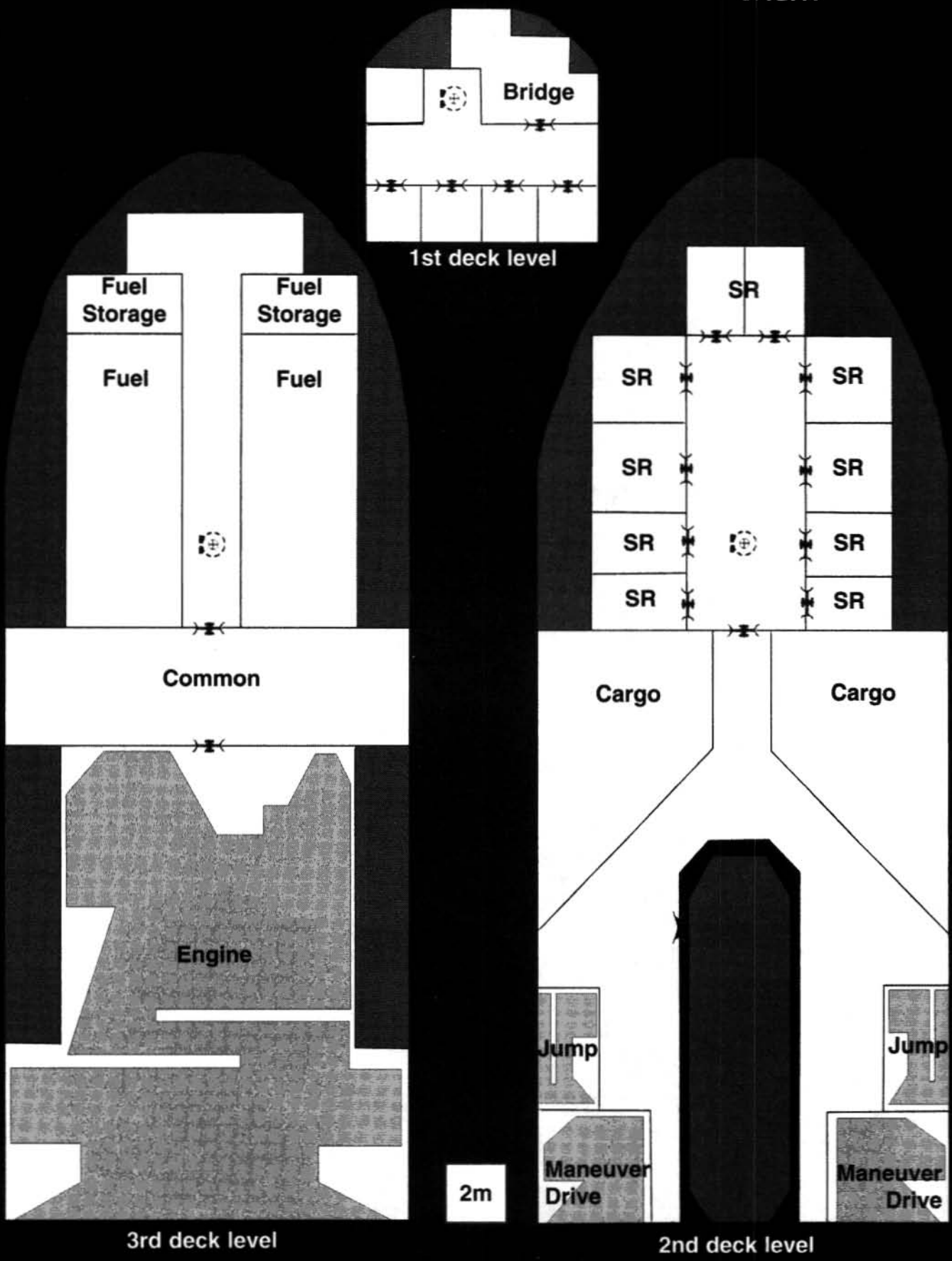
8 Size Rating
0 Fire Control Rating

1 Jump Rating
1 G Rating/ Thruster
1 Power Plant Rating
20.8 Fuel Rating/ Scoop/ Refine
2A 3P 0J Sensor Rating
20 Armor 11 Structure

Built on a 200-ton hull, the yacht is a noble's plaything, used to entertain friends and undertake political or commercial missions. There are three ship's vehicles: an air raft, a 30-ton ship's boat, and an ATV. The ship's boat is fitted to ferry the ATV from orbit to surface and back. The yacht is not streamlined, and relies on its ship's boat for inner-atmosphere cargo and passenger transfers.



# Yacht


Bridge
1st deck level
Fuel Storage
Fuel Storage
Fuel
Fuel
Common
Engine
3rd deck level
SR
SR
SR
SR
SR
SR
SR
SR
SR
Cargo
Cargo
Jump
Jump
Maneuver Drive
Maneuver Drive
2nd deck level
2m

## Patrol Cruiser

Tons: 200
Crew: 10
Cargo: 0

Volume: 5600
Passengers High/Medium: 8 Troops
Controls: Military Standard

Cost in Mcr: 236.04
Passengers Low: 0
Tech Level: 12

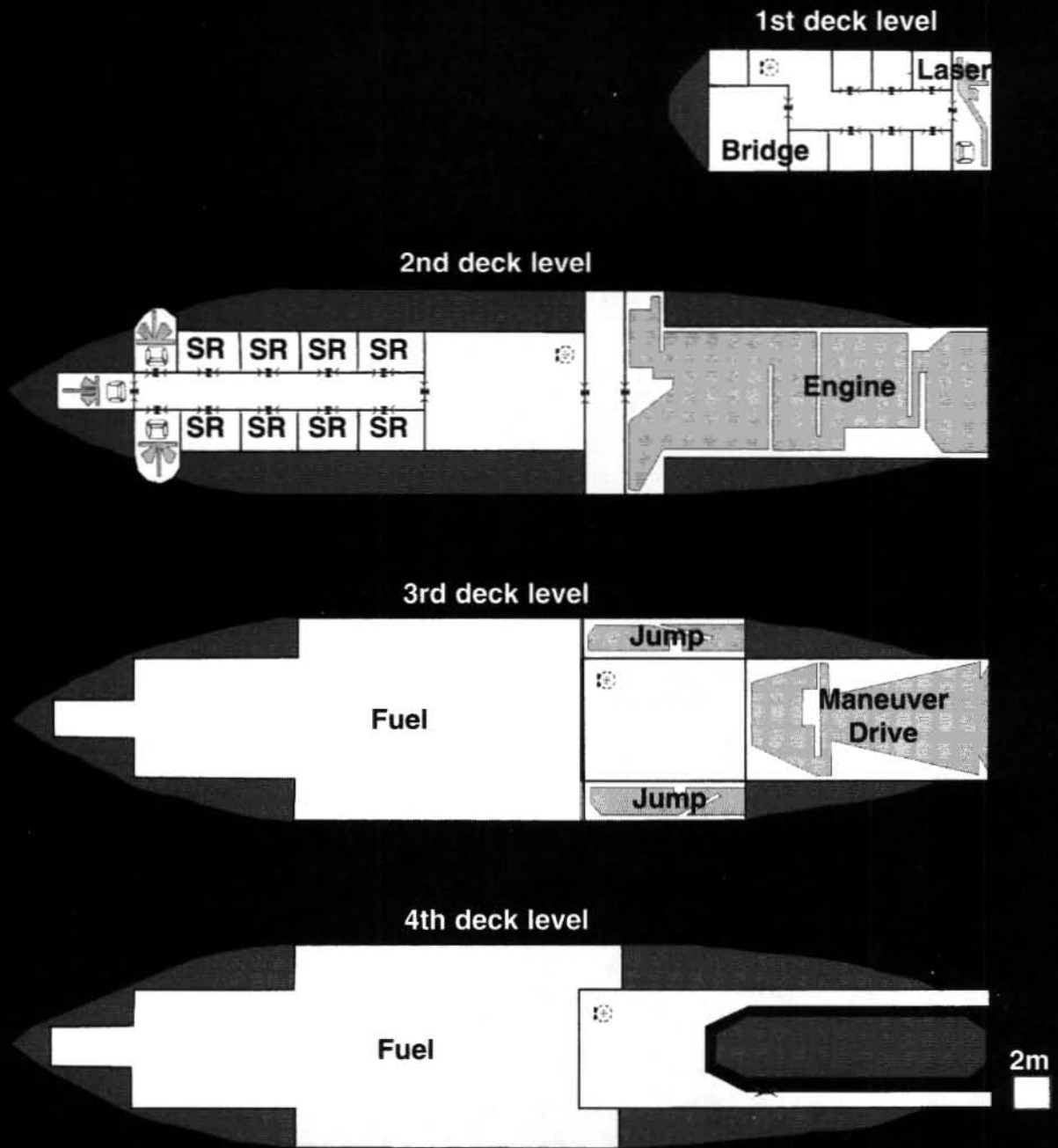
8 Size Rating
2 Fire Control Rating
2 x L Battery - 3,3,2,0
2 x M Battery - Barbette 5

? 3 Jump Rating
4 G Rating
7 Power Plant Rating
162.2 Fuel Rating/ Scoop/ Refine
8 Sand Caster Rating
10A 4P 4J Sensor Rating
40 Armor 14 Structure

GCarrier and Ship's Boat

Using a custom 200-ton hull, the patrol cruiser is a military vessel used for customs inspections, piracy suppression, and normal safety patrols. There are two ship's vehicles: a GCarrier and a 30-ton ship's boat. The ship is streamlined to chase offenders wherever they go, regardless of atmosphere.

# Patrol Cruiser



## Mercenary Cruiser

Tons: 800
Crew: 30
Cargo: 23.6

Volume: 11200
Passengers High/Medium: 40
Controls: Military with Bridge

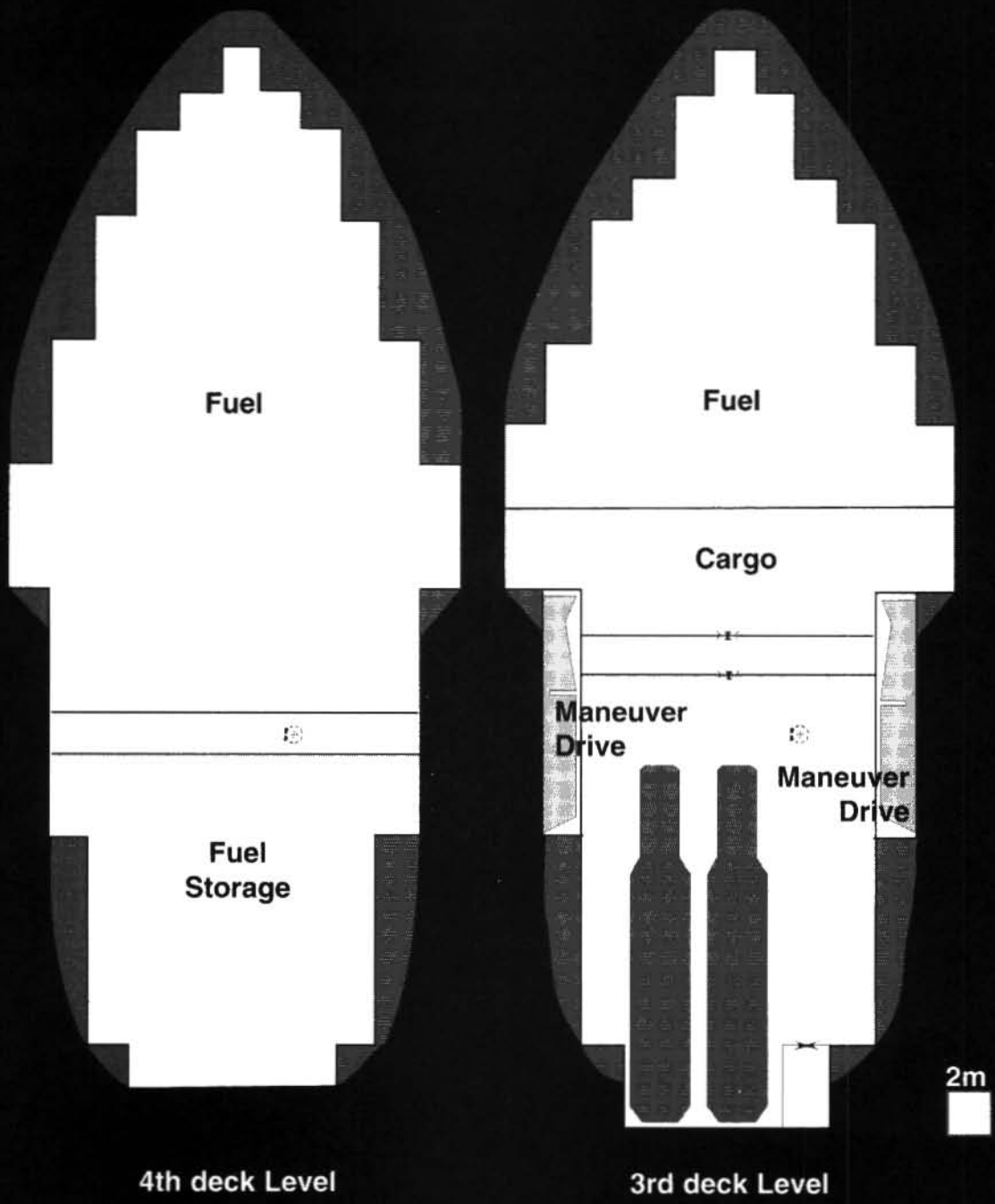
Cost in Mcr: 285.352
Passengers Low: 4
Tech Level: 12

8 Size Rating
2 Fire Control Rating
2 x L Battery - 3,3,2,0
2 x M Battery - Barbette 5

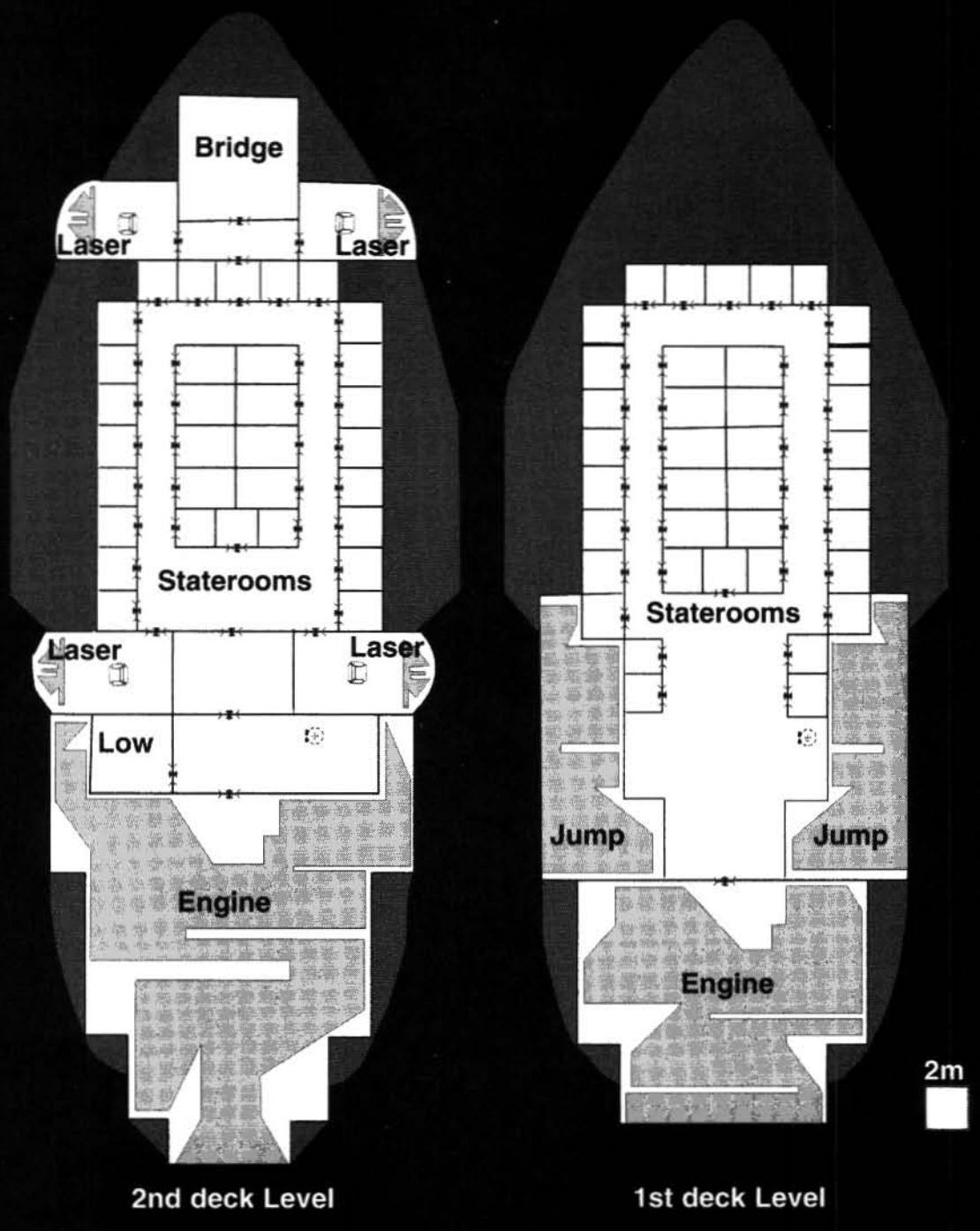
3 Jump Rating
2 G Rating/ Thruster
3 Power Plant Rating
303.2 Fuel Rating/ Refine
2 Sand Caster Rating
1 Damper Rating
10A 4P 10J Sensor Rating
60 Armor 14 Structure

Using an 800-ton hull, the mercenary cruiser is built to carry small troop units for corporate or government operations. There are five ship's vehicles: two modular cutters (one open passenger and cargo module and one fuel module), two ATVs (in ATV modules), and one air raft. The hull is unstreamlined.

# Mercenary Cruiser (A)



# Mercenary Cruiser (B)




2nd deck Level

1st deck Level

# PERSONALITIES

The individuals described here are not the typical persons found in space-faring employment. They are the best at what they do. The government, and even the Royal Family, have taken note of these individuals from time to time. Their exploits, traits and positions are such that they are recognized in what they do. Should a traveller encounter one of these characters, it would not be unlikely at all to have heard of, or even know, some of the personal history behind them.

**Marine Captain Melissa Von Sarnoff**
B7374A, Age 26, ATV-2, Brawling-2, Perception-1, Rifle-3.

Captain Von Sarnoff was born in Sylea 20 years before the start of the Third Imperium. She is the daughter of a Noble family and has been very successful in her military career. She attended the Sylean Military Academy along with her three brothers, and father, Captain Robert Von Sarnoff. She was outstanding in her class in many skills, with close combat, and riflery being her two best subjects. She stood out of her class not only because of her hard work but because of her utter fearlessness.

Von Sarnoff's father trained her form birth to be the best at everything and in many ways she is. but Von Sarnoff does have a weakness—a lack of trust in the abilities of those under her command. While at the top of her class, her superiors noted that she is a loner and preferred to do things herself unless instructed to enlist the aid of her peers.

After finishing her training, she was stationed at Fleet Headquarters on Sylea and served under Major Radley. She has not seen a lot of combat because of her tender age but was instrumental in stopping a terrorist plot to kidnap a Third Imperium Emissary: a band of youths had plotted to infiltrate an Imperium ship with false identifications and posing as a political youth group. Captain Von Sarnoff noticed a discrepancy in the fake ID's, and then infiltrated the band and capture them. She received the Third Imperium Medal of Valor Second Class for her actions and was sent to the northern continent of Sylea for special forces training. Her training now complete, Captain Von Sarnoff is the first noblewoman to hold a position in the Marine Special Forces, and commands an anti-terrorist/anti-hijacking force deployed from the main orbital starport of Sylea.

**Military Navy Captain Elizabeth Knowles**
7649A3, Age 46, ATV-1, Brawling-1, Leadership 4, Physics-3, Pilot 3, Rifle-1, Ship's Boat 2. Tactic-3, Vac Suit-2.

Captain Knowles started her career as a Gunner's Mate aboard the Sylean Federation ship Intrepid. She saw action during the Morgensen Raid, and was instrumental in saving several members of her weapon's bay when it was hit by fire. She was awarded the Sylean Federation Bronze Cluster for Bravery in Combat. She was offered a commission to Ensign, and immediately took the chance.

Officer training left its mark on the young woman as the other classmates did not accept "lower deck scum" becoming an officer. She worked hard and passed, but made no friends among her class. She decided to take an educational sabbatical and attend school before taking active assignment. Her successes in the field of Relativistic Physics kept her in school to the completion of a Master's Degree from the Norminustrum Institute on Sylea before returning to active duty.

She was a Lieutenant Commander at the Sylean Naval Depot when Emperor Cleon I founded the Third Imperium. The quick change of power greatly affected the old military hierarchy, giving Knowles the chance to show her capabilities. She was given command of a destroyer. She never saw action against a political foe, but her ship was twice awarded the Emperor's Citation for actions against Pirates in the Sylea Sector.

Captain Knowles now commands a squadron of three destroyers and one light cruiser, charged with the internal security of Sylean shipping lanes. She is a good tactician and a very able leader. Her knowledge of jump and maneuver technology gives her an added advantage in the great unknown of space combat. She has never lost.

**Freighter Captain Errol S. Barrett**
5619F7, Age 36 , Computer-2, Navigation-1, Pilot-2, Short Blade-2, SMG-2, Vac Suit-2

Captain Barrett was born on the outskirts of the Capital. He enlisted in the Navy in order to escape the political side of Sylean life. He was stationed as a Marine Liaison on Ceres III when the Navy discovered that Errol Barrett was a strategic genius.

On a routine exercise Barrett was put in charge of a platoon of Marines and given a map of simulated territory. Within seconds, Barrett formulated the perfect plan to infiltrate the territory that astonished his superiors. The map was designed to test the creativity of the troops. and no one had actually devised a completely working solution to the terrain barriers except for Barrett. At the age of twenty-four, Barrett was working for Naval intelligence on newly mapped areas of the Sylean Federation.

Barrett soon succumbed to the pressure of the Navy pressing on him to solve battle scenarios, which were then entered into a computer and saved against possible attacks. He began to think of himself as a pawn of the Sylean Federation, and subsequently botched a mission, on purpose.

After confessing to what had happened, Barrett was assigned duty aboard a civilian subsidized transport vessel and has been there ever since. The rise of the Third Imperium has gained him the ownership of the freighter. He is content with his job, but the new Imperium keeps a tab on his whereabouts in case he needs to be called in to consult on a mission. Captain Barrett would rather be left alone but the Imperium has threatened to court-martial him for his previous actions if he does not cooperate.

"From core of Capital City,
To the rim of Solomani.
All decks blazing gallant,
Brave seven seas starry."
—First verse of *Star Intrepid*, traditional Navy voyage song.

"Cowardice, like alcoholism, is a lifelong affliction."
—Captain Melissa Von Sarnoff

## Laboratory Ship

Tons: 400
Crew: 15
Cargo: 11.9

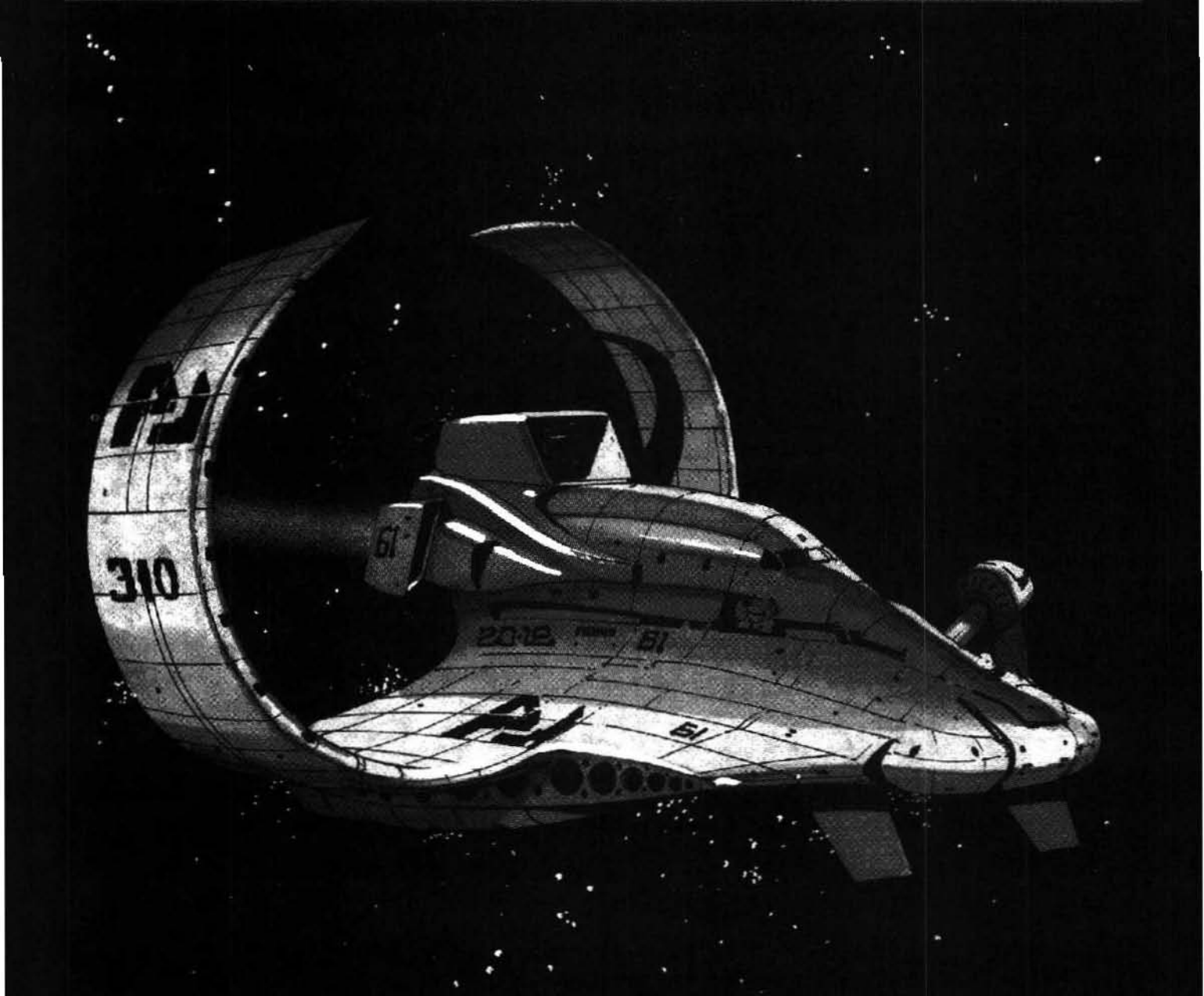
Volume: 5600
Passengers High/Medium: 20
Controls: Military with Bridge

Cost in Mcr: 145.209
Passengers Low: 10
Tech Level: 12

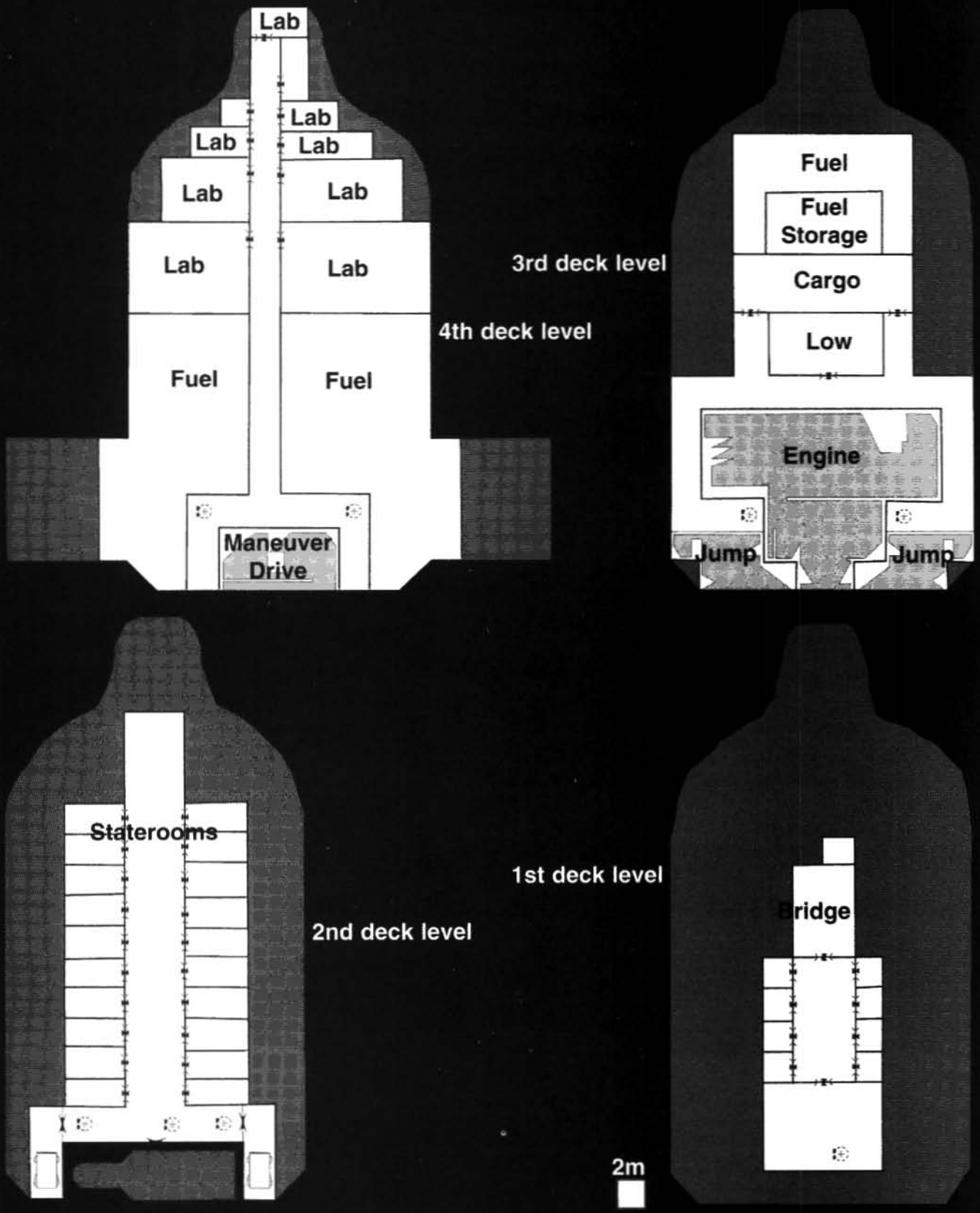
8 Size Rating
0 Fire Control Rating

2 Jump Rating
1 G Rating/ Thruster
1 Power Plant Rating
82 Fuel Rating
10A 4P 10J Sensor Rating
0 Armor 1 Structure

Using a 400-ton hull, the laboratory ship is a mobile base for scientific analysis and investigation. It contains labs for 20 scientists, and there are three ship's vehicles: two air rafts and one 40-ton pinnace, used mainly for research in space, or moving any cargo or passenger. Laboratory space on board equals 85 tons. The ship is unstreamlined, and often customized to best serve its scientific mission.



# Laboratory Ship



## Safari Ship

Tons: 200
Crew: 5
Cargo: 4.9

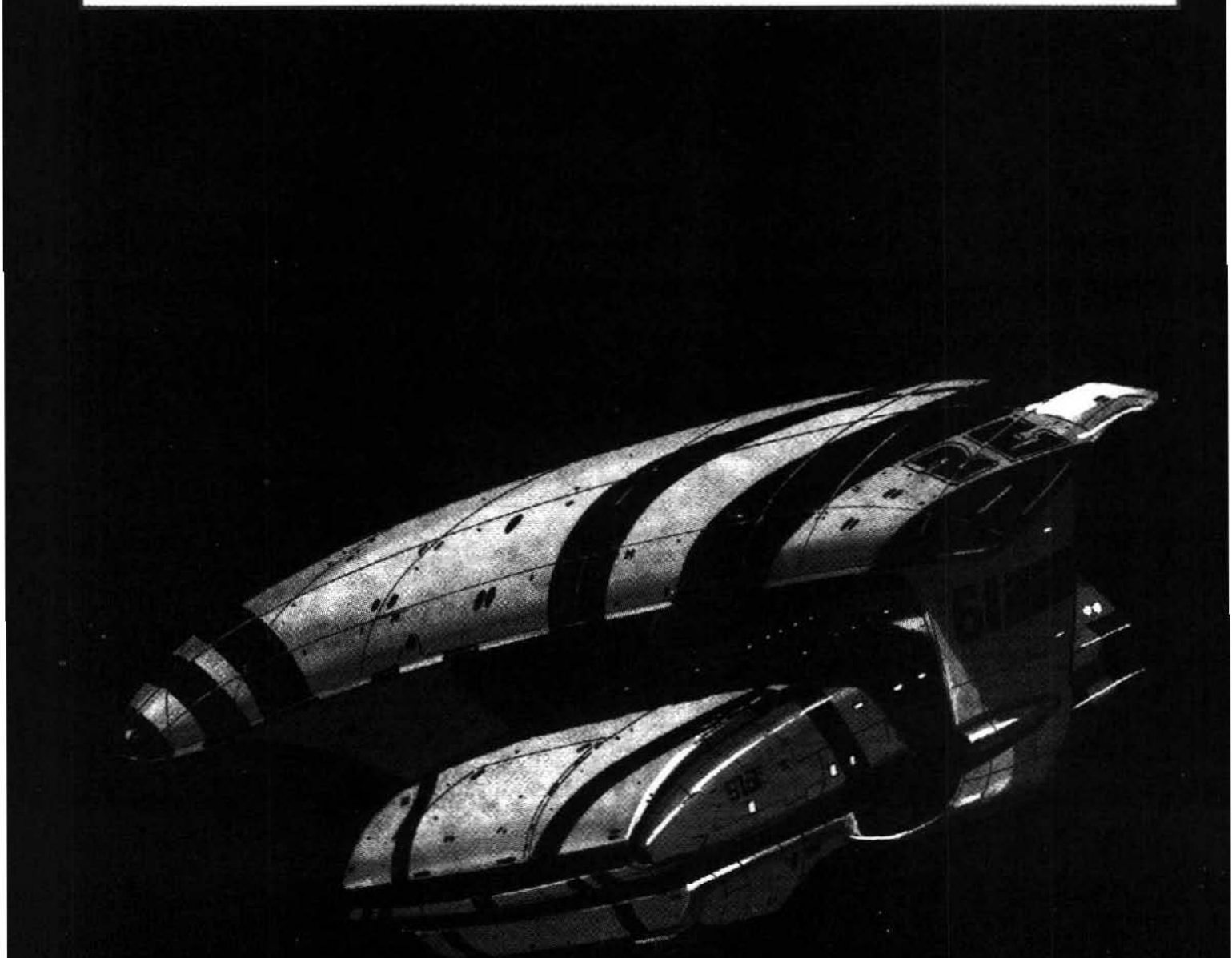
Volume: 2800
Passengers High/Medium: 6
Controls: Civilian Standard

Cost in Mcr: 36.558
Passengers Low: 0
Tech Level: 12

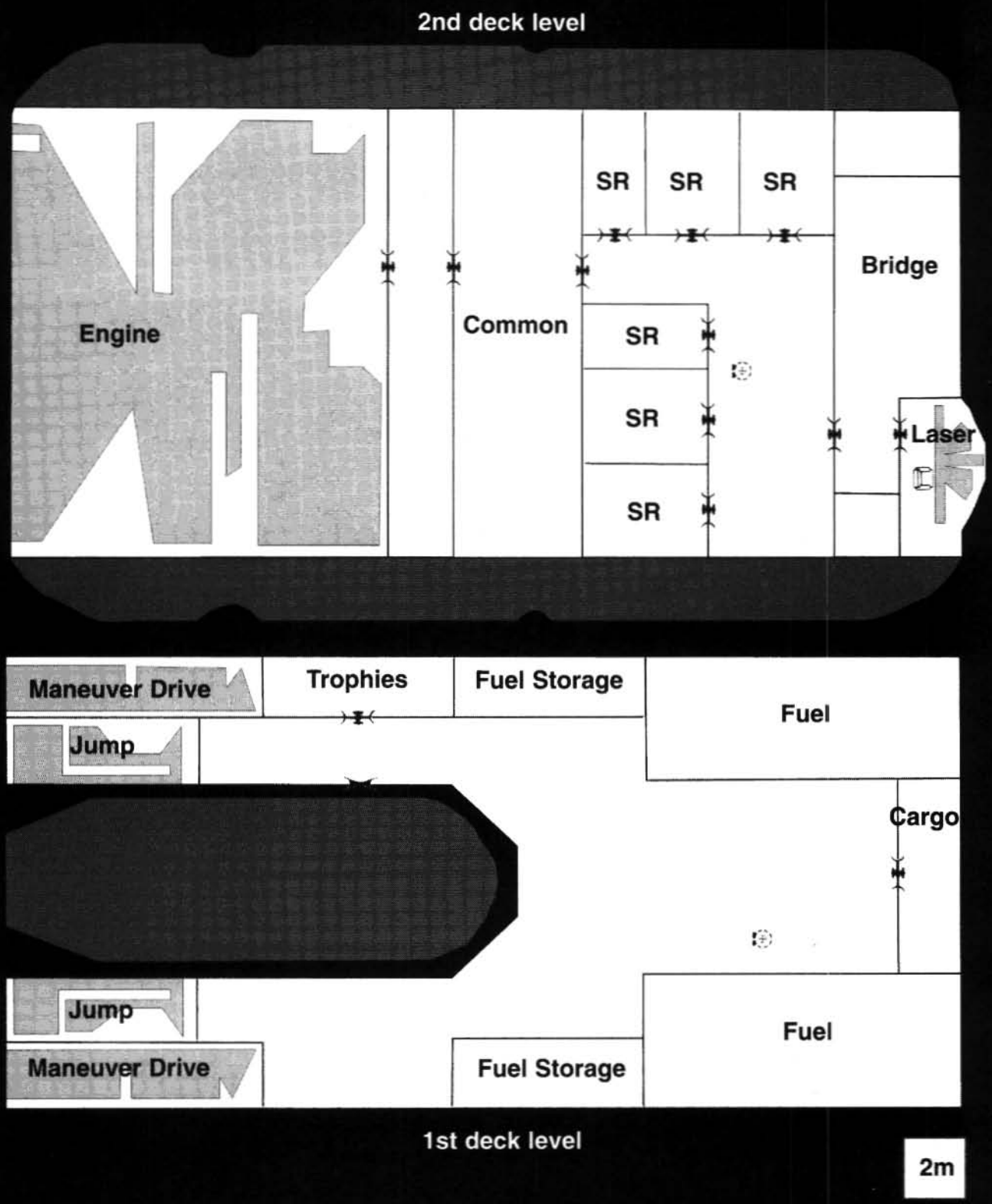
8 Size Rating
0 Fire Control Rating
L Battery - 2,0,0,0

2 Jump Rating
1 G Rating/ Thruster
1 Power Plant Rating
40.9 Fuel Rating/ Scoop/ Refine
2A 3P 10J Sensor Rating
0 Armor 9 Structure

The safari ship is an excursion vessel intended for trophy-taking (real or photographic) expeditions to other worlds. There are two ship's vehicles: an air raft and a 20-ton launch. Two 7-ton capture tanks hold specimens, and a 7-ton trophy lounge serves as a hunter's recreation area. The hull is streamlined.



# Safari Ship


2nd deck level
Engine
Common
SR
SR
SR
SR
SR
SR
Bridge
Laser
Maneuver Drive
Jump
Trophies
Fuel Storage
Fuel
Cargo
Jump
Maneuver Drive
Fuel Storage
Fuel
1st deck level
2m

## CORSAIR

Tons: 400
Crew: 10
Cargo: 109

Volume: 5600
Passengers High/Medium: 0
Controls: Civ Adv/bridge/fib

Cost in Mcr: 216.5
Passengers Low: 20
Tech Level: 11

8 Size Rating
3 Fire Control Rating
3 x L Battery 3, 0, 0, 0

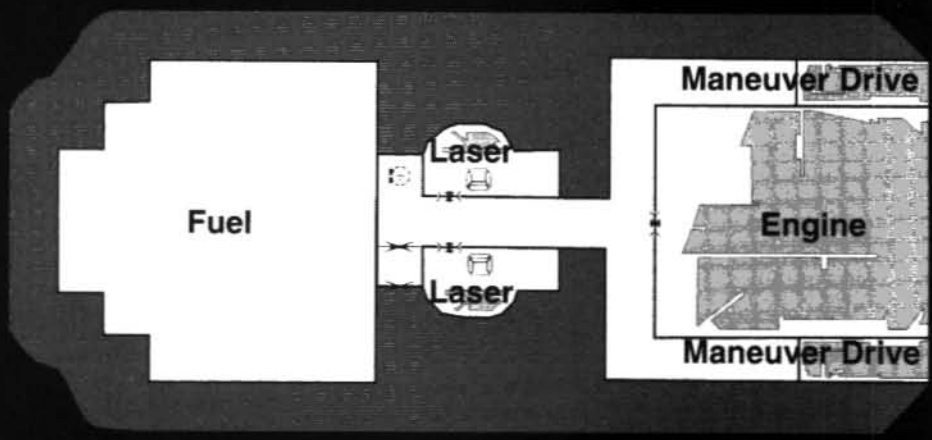
2 Jump Rating
3 G Rating
3 Power Plant Rating
118 Fuel Rating
10A 4P 4J Sensor Rating Masking
40 Armor 16 Structure

Chief Naval Architect: Joe Walsh

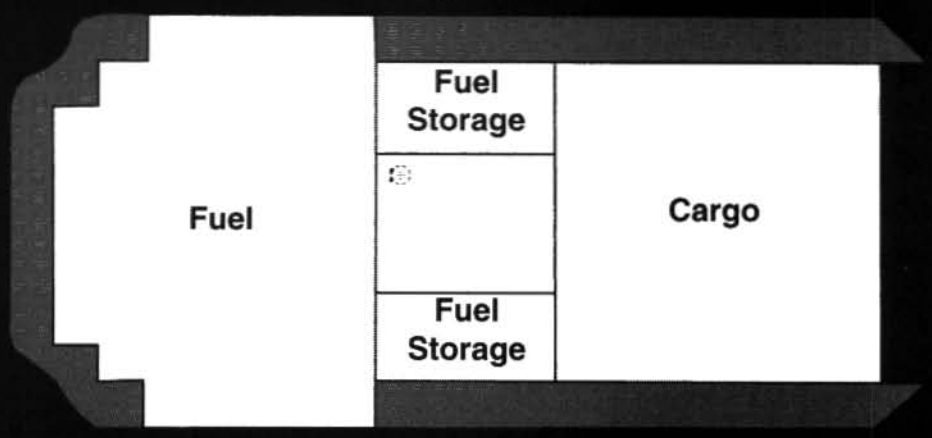
The Corsair, an armed raiding ship, is mostly used by pirates. Notable features of the corsair are large cargo doors and variable identification features. The large clamshell doors can open to reveal the entire cargo bay. The ship has several centrally controlled identification features which can be used to disguise the ship: radio emissions alter frequency and content, and the ship's transponders can be altered to identify the vessel as having any of a variety of missions and identities.

Based on a 400-ton, wedge-shaped, unstreamlined hull, the ship has 10 Large Staterooms for use as crew quarters, while the 20 low berths are available for emergency use, or to hold captives. The Corsair is not normally available on the open market, as the ship is a non-commercial type.

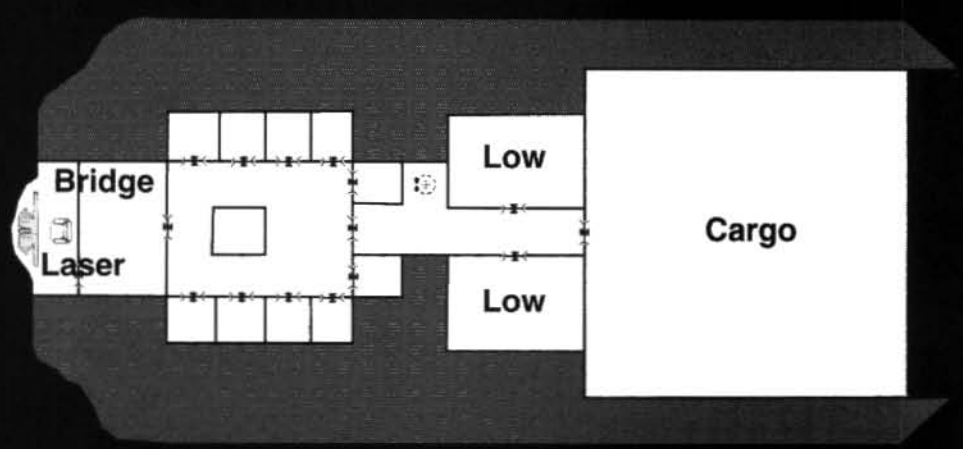
1st deck level




2nd deck level




3rd deck level



## Large Armed Freighter

Tons: 3,000
Crew: 43
Cargo: 1,600

Volume: 42,000
Passengers High/Medium: 0
Controls: Civ Std /bridge/fib

Cost in Mcr: 574
Passengers Low: 0
Tech Level: 12

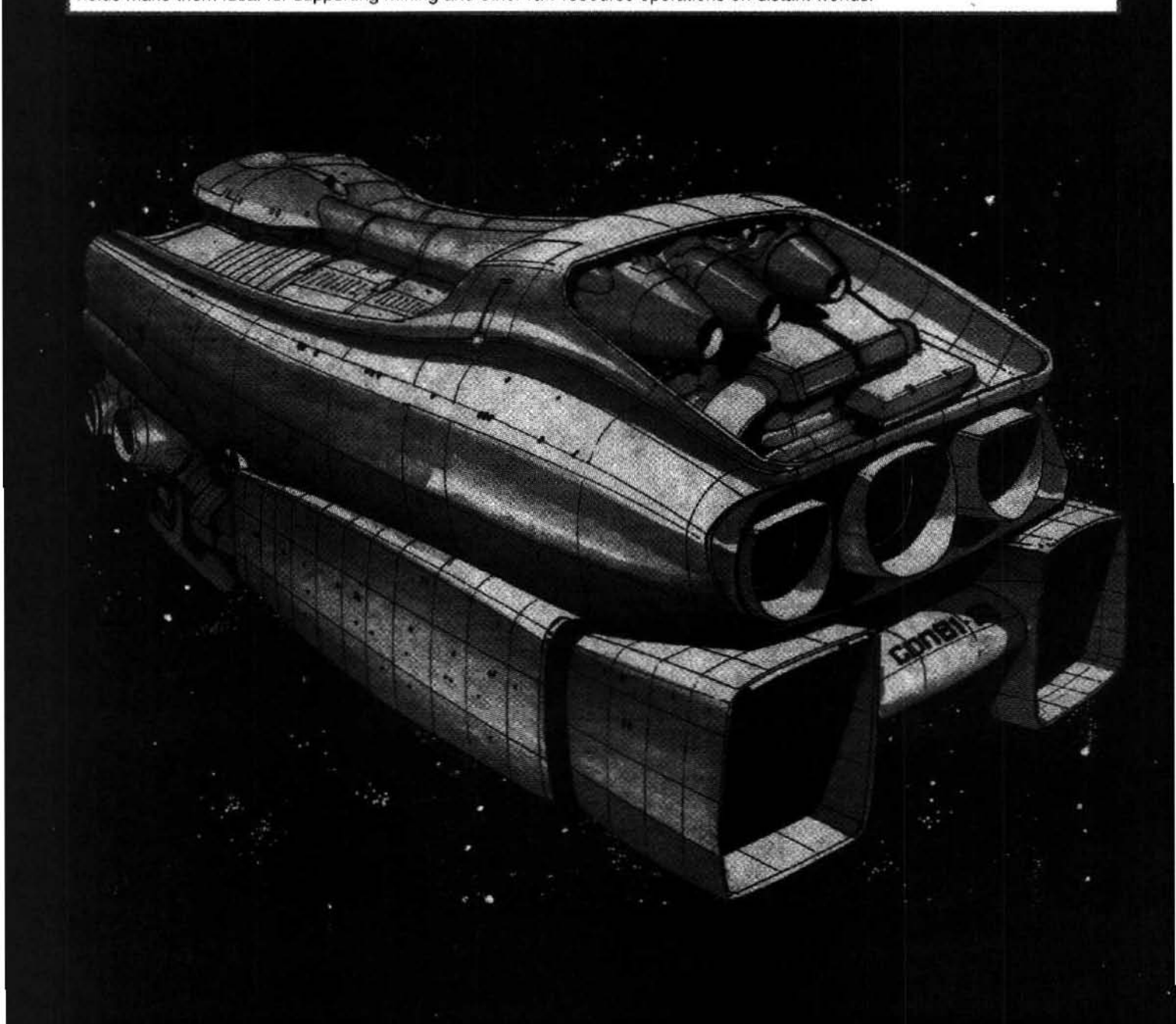
9 Size Rating
4 Fire Control Rating
10 x L Battery - 2, 0, 0, 0

2 Jump Rating
2 G Rating
2 Power Plant Rating
615 Fuel Rating
10 (300) Sand Caster Rating
2A 3P 0J Sensor Rating
10 Armor 23 Structure

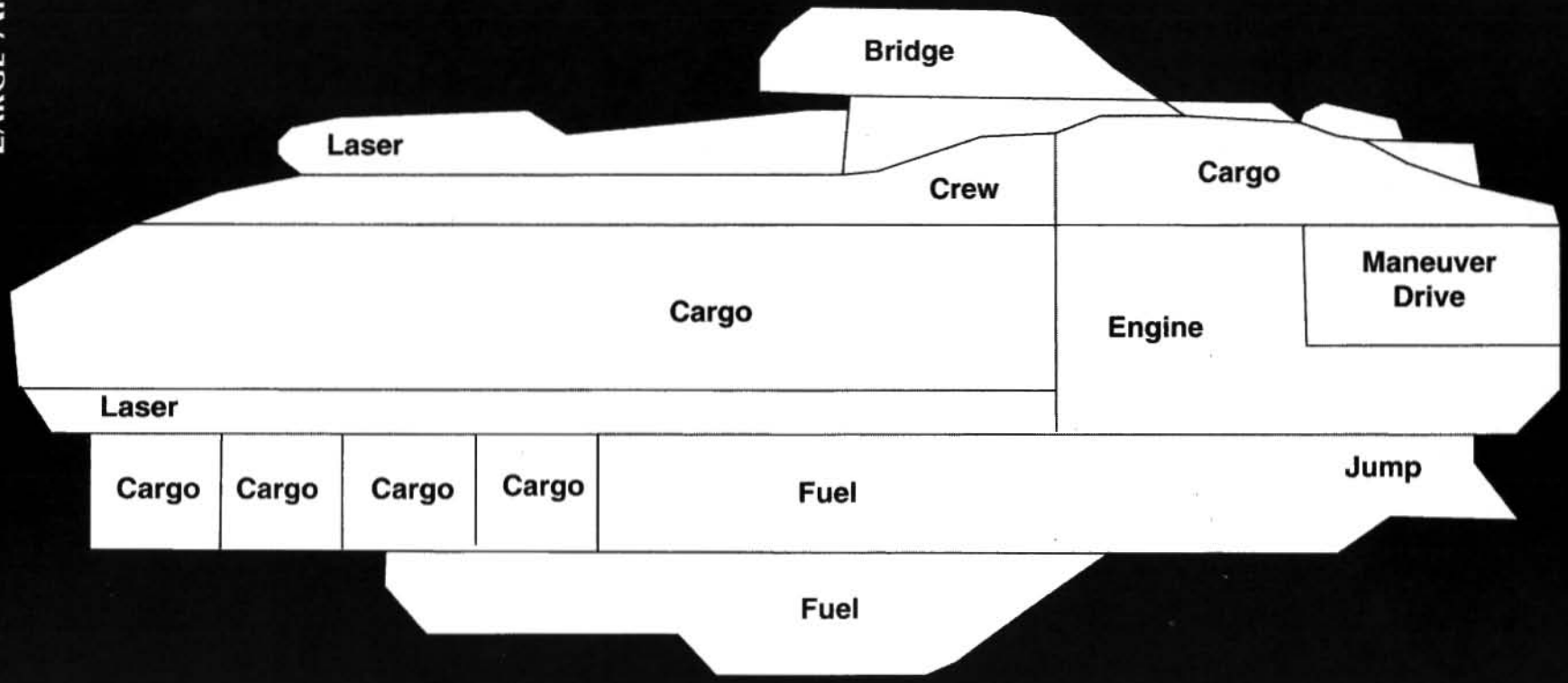
Carries Ship's Boat, Launch

Chief Naval Architect: Liam McCauley

The Large Armed Freighter is a relatively new entry into the long-haul, large-cargo shipping industry. It is perilously expensive, but the armor and multiple weapons batteries have made it a favorite auxiliary ship for use in military fleet replenishment. Civilian use has been light, with those doing so seeing service out beyond the boundaries of the Imperium. Their large cargo holds make them ideal for supporting mining and other raw resource operations on distant worlds.



# Large Armed Freighter



## Military Landing Ship Infantry

Tons: 800
Crew: 32
Cargo: 4

Volume: 11,200
Passengers High/Medium: 124
Controls: Mil Std /bridge /fib

Cost in Mcr: 415
Passengers Low: 0
Tech Level: 11

8 Size Rating
3 Fire Control Rating
L Battery - 4, 2, 1, 0
4 x Msl Battery 20 (13)

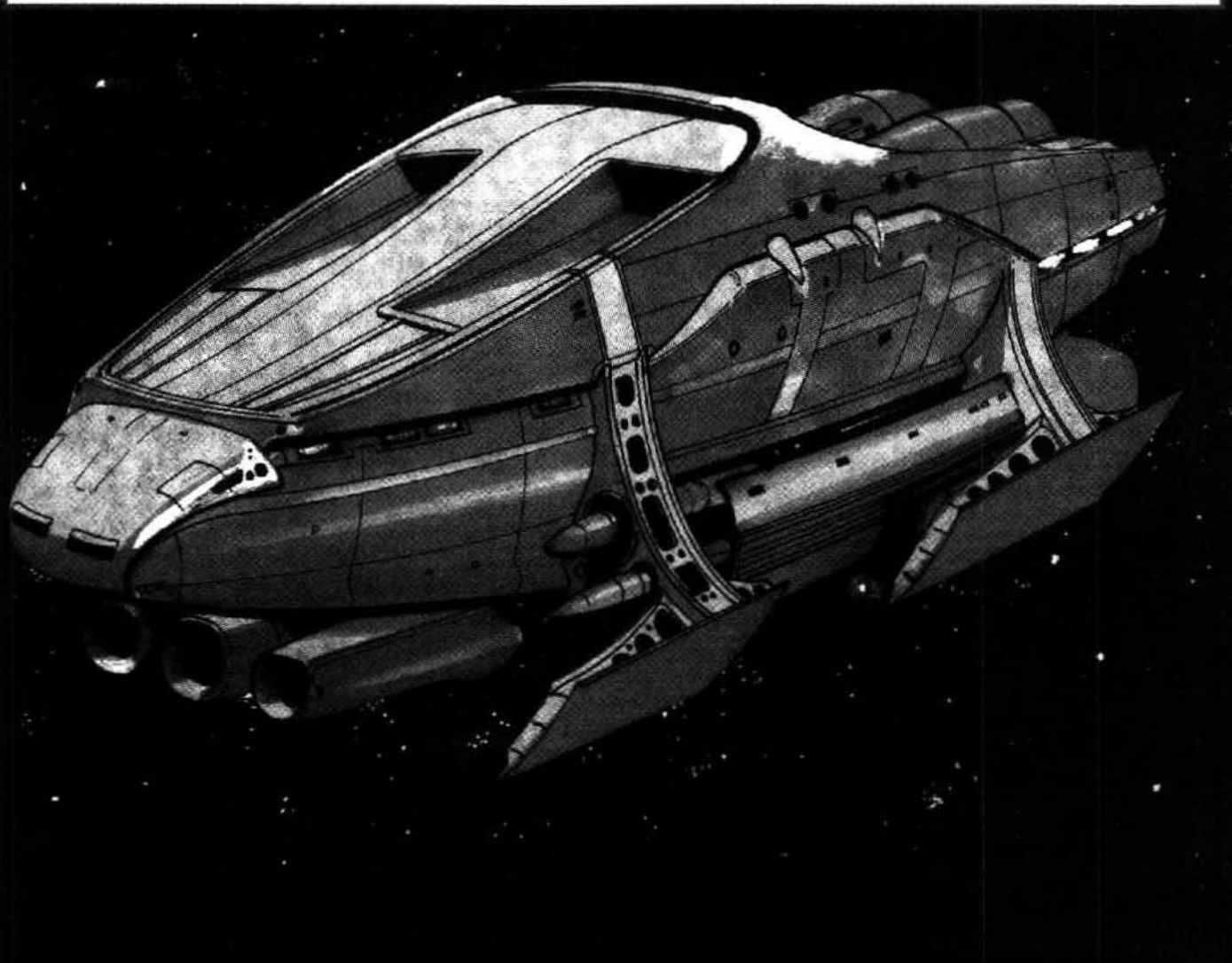
2 Jump Rating
2 G Rating HEPlaR/ Thruster Plates
2 Power Plant Rating
240 Fuel Rating/ Scoop/ Refine
10A 4P 4J Sensor Rating
70 Armor 14 Structure

2 x ship's boats.
High Passengers are actually onboard Marines

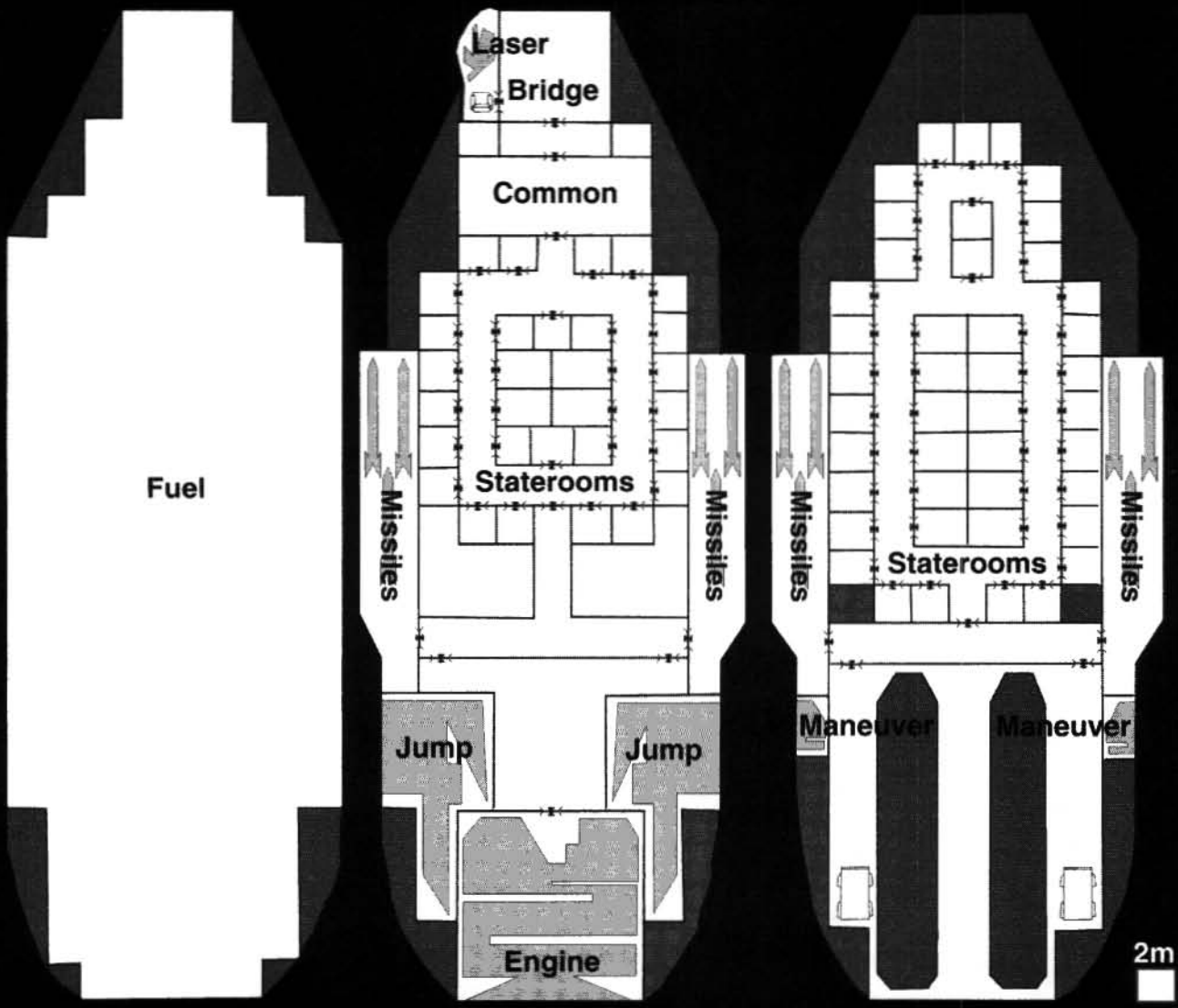
Chief Naval Architect: George Herbert

The Landing Ship Infantry and the Mercenary Cruiser evolved out of a single prototype in response to an Imperial Naval specification for a vessel able to land a marine company against hostile defenders in a moderate threat environment. The military version did not opt for the modular cutter design, but instead went for higher troop-carrying capacity.

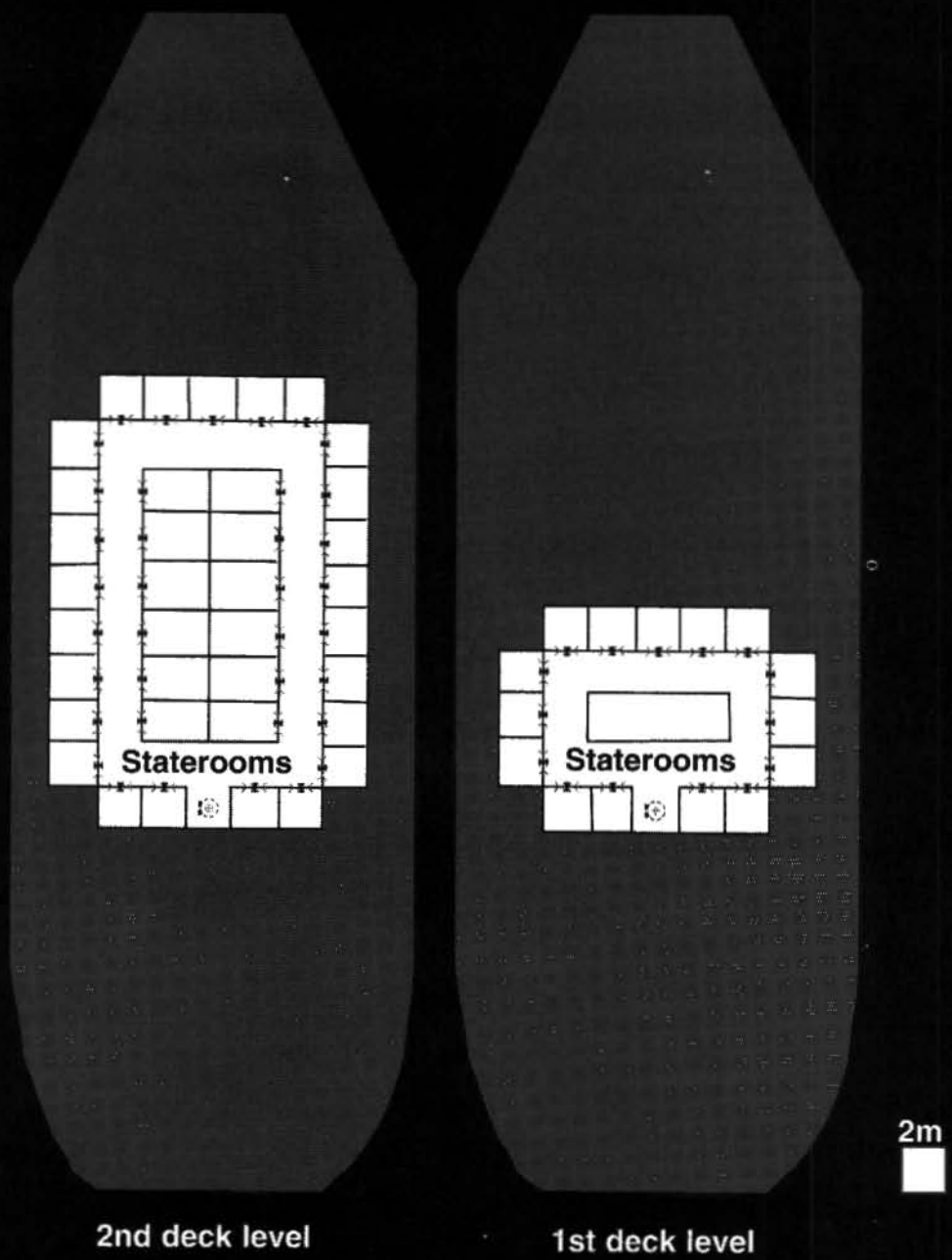
These ships have a significant amount of redundancy and toughness, as they carry large numbers of troops and operate far from home much of the time. The hull armor is significantly tougher than the average warship its size, and the main power plant is broken down into three 250-MW standard fusion units and an emergency, "Get-Home" fission reactor of 25 MW rating. A second full life support system is fitted should the primary go offline due to failure or damage. Electronic and Mechanical Shops and a Sick Bay are fitted to provide repair and medical facilities on board. Unlike other designs for similar ships, both small craft are in internal bays not external, allowing for repair access. The ships were designed shortly after the introduction of thruster plates by cautious engineers, and as a result ended up with a dual sublight propulsion system. Both thrusters (1-G rated) and HEPLAR (1-G) are fitted, and if both are operating properly the ship can make 2Gs. It has unlimited endurance at 1-G on thrusters, or up to 11 G-hours of HEPlaR thrust.



# Military Landing Ship Infantry (A)



# Military Landing Ship Infantry (B)



# MORE PERSONALITIES

**Naval Commander (Doctor) Mark C. Seldera**
865896, Age 35, Admin-1, Computer-1, Medical-6, Research-4, Writing-2.

Commander Seldera was born off-world on a merchant liner to transiting parents. He always had a love of space travel, but eventually received his medical training at the Vlorshiek Academy at his parents' insistence. He is politically conservative, and only cares about his rank and station in life. He made his mark on the medical world by single-handedly curing an outbreak of disease on Sylea. He is the Imperium's foremost authority on human virus and has written many academic books on this subject.

The one drawback to Commander Seldera's research is his motive, which is pure personal gain. He has secretly discovered and contained two viruses that could wipe out an enemy force, but have yet to be tested in real combat. The Imperium does not like to deal with Seldera because of his political affiliations and his arrogance. They suspect his experimentation of the viruses that he has discovered but cannot catch him in the act. His naval rank does nothing to curb his personal tendencies, either.

The Imperium is keeping a very close eye on Seldera to make sure that he does not sell his talents to the highest bidder. He is, therefore, stationed on a Naval Station where he can be monitored. His contacts are also under close scrutiny and have not shown to be subversive as of yet. Dr. Seldera is outlandish in his actions because he knows that the Imperium needs him should war ever break out. He has his run of the base and is not very well liked by his peers. Seldera hopes to one day make enough money to retire a wealthy man from the military and disappear from the watchful eye of the Imperium.

**Mercenary Captain Otto K Slinger**
486755, Age 38, Gunnery-1, Intrusion-3, Jack-of-all-Trades-2, Leadership-2, Mechanics-1, SMG-3, Rifle-3, Streetwise-5.

Captain Slinger was born in the backwaters of the Sylean Federation. His troubles began at a young age when he learned that he had a talent for breaking Federation codes and stealing arms. He then joined a subversive group and sold the arms to small military factions. Otto has no political interests and cares only for himself and his only living relative, his uncle. Otto was given to the Federation by his friends and he has not forgiven them since.

Slinger escaped from Federation prison six months before the rise of the Third Imperium. He started his own mercenary group that found political favor with the new reign when he inadvertently saved the life of a third cousin to Emperor Cleon I during a botched raid on a rival mercenary band.

The Empire does not condone Captain Slinger's operations, but certainly does not hinder them. In fact, special loans were granted for the purchase of a Cruiser for the group. To date, Captain Slinger has gone on five successful missions and one failed mission where he lost eighty percent of his command.

Otto has a lot of friends and connections, especially in the underworld of Sylea. He can find out just about any kind of information one might require, but there is a price. Slinger is not a greedy person but knows the value of a dollar and what it means to ask a favor of his friends. If the cause seems to be just, then his prices are reasonable and he is happy to help. His favorite kind of mission is one where he can anger an established government or monarchy outside of the Imperium.

Captain Slinger desperately wants to take revenge on the few who turned him in to the old Sylean Federation. His actions are suspected to be severely hostile.

**Commander Colin A. Hughes,**
**Squadron Commander YC2234, the Eagle Claws.**
5619F7, Age 50, Carousing-4, Computer-2, Navigation-1, Pilot-4, Short Blade-2, SMG-2, Vac Suit-2.

Commander Hughes was born into the Sylean Federation to a military family. He was trained at the Sylean Military Academy and is a decorated officer. He has seen a lot of combat and has served under some of the very best Admirals in Sylean history. Hughes is widely known and respected throughout the Third Imperium, and has many connections.

He is known as a tough Commander and expects nothing but the best from his Squadron. He is known for never taking risks and will not enter a combat situation without knowing all of the facts; his judgment is impeccable and is never doubted. He has the respect of his pilots but not necessarily their friendship. He has no time or space for weakness and will not tolerate anyone who cannot cut it in his Squadron. He has the highest record for successful missions in the navy.

Young pilots strive to make the cut for his command but few ever make it. Those who do can expect no special treatment from Hughes. His reputation precedes him throughout the military and is often consulted for his expertise in the area of space combat.

Hughes has settled very nicely into his routine and is very traditional when it comes to his unit. He is not getting any younger and will eventually be forced into retirement.

**Space Station Administrator John Fergusen**
948499, Age 40, Admin-5, Computer-1, Gambling-3, Vac Suit-1.

Fergusen is a bureaucrat who loves his job. He started at the bottom of the ladder and has worked very hard to get the job that he has today.

John Fergusen has many responsibilities, including the monitoring and safekeeping of the space station. He is in charge of keeping the log books updated and making sure they are accurate, he also takes care of all of the supplies and demands of the station. It is a high pressure job but he tackles even the smallest of problems with zeal.

His biggest challenge is in keeping a close communication with the people who are actually on the station and do the day to day upkeep that he oversees. Sometimes there is a clash of personalities with highly ranked Captains and Commanders. Fergusen does everything by the book and will not usually make exceptions, only in times of crisis will he bend the rules. He is an efficient man and does not waste time or money if he can help it. Some Space Station personnel like to get away with things like ordering unnecessary supplies. Fergusen sees this as taking advantage of the Imperium and will not stand for it. He takes pride in his work and hopes that he will be recognized for his effort. He has won awards for his efficient run of the station but believes he deserves more than praise and a pat on the back.

He was recently promoted as second administrator on Sylea Down, and now is second to the senior military officer, Admiral J. Beddard, on Sylea Orbital. Many foresee Fergusen becoming a senior bureaucrat under Emperor Cleon I's reign.

## Military Frontier Cruiser

Tons: 2,000
Crew: 50
Cargo: 35

Volume: 28,000
Passengers High/Medium: 48
Controls: Mil Std /bridge /fib

Cost in Mcr: 1056.5
Passengers Low: 0
Tech Level: 12

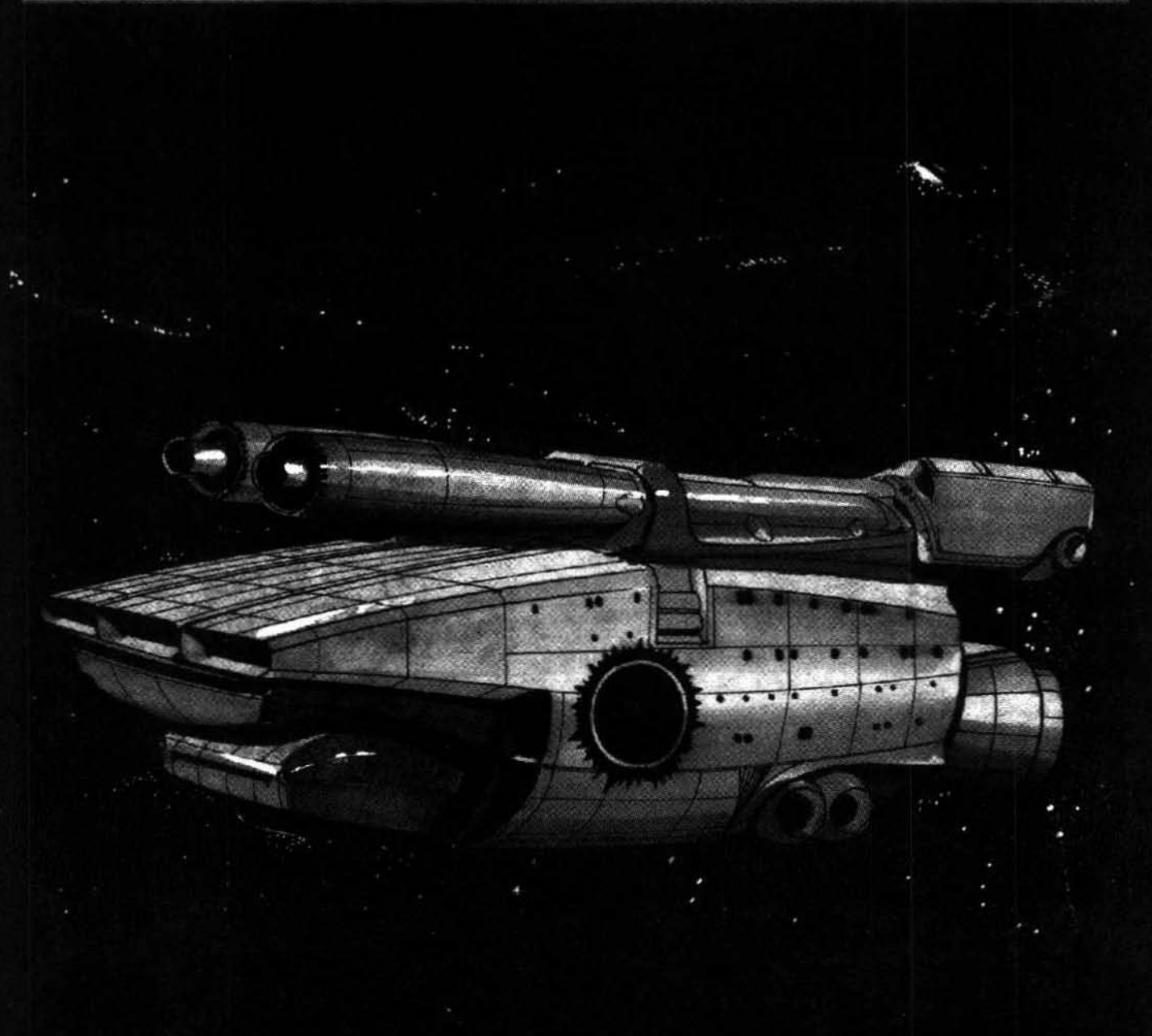
9 Size Rating
4 Fire Control Rating
PA Battery - 9, 7, 6, 5
4 x Msl Battery 20 (20)
10 x L Battery - 2, 2, 0, 0

2 Jump Rating
4 G Rating Thruster Plates
6 Power Plant Rating
632 Fuel Rating /S /R
5 (150) Sand Caster Rating
16A 5P 16J Sensor Rating
30 Armor 25 Structure

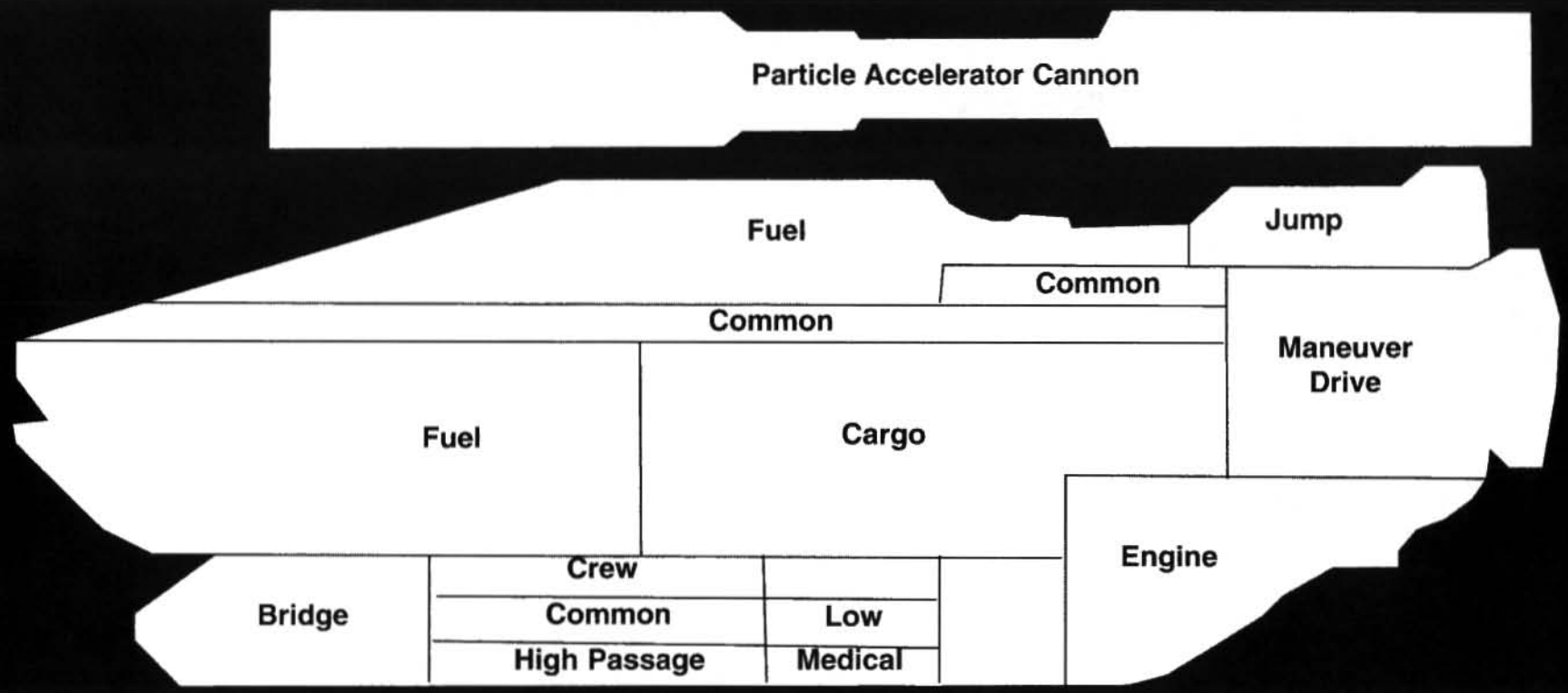
Launch, Ship's Boat
High Passengers are actually onboard Marines

Chief Naval Architect: Liam McCauley

The Military Frontier Cruiser is designed to "show the flag" and discourage piracy. As a representative of Imperial might, it can patrol systems where a front-line cruiser would be uneconomical or overly ostentatious. This ship is usually more than capable of holding off a corsair or two with its particle accelerator and missile barbettes, whilst defending with sandcasters and laser turrets. It is not designed to fight larger craft, so no meson screen is fitted.



# Military Frontier Cruiser



## Military Destroyer

Tons: 1,000
Crew: 50
Cargo: 15

Volume: 14,000
Passengers High/Medium: 6
Controls: Mil Std /bridge /fib

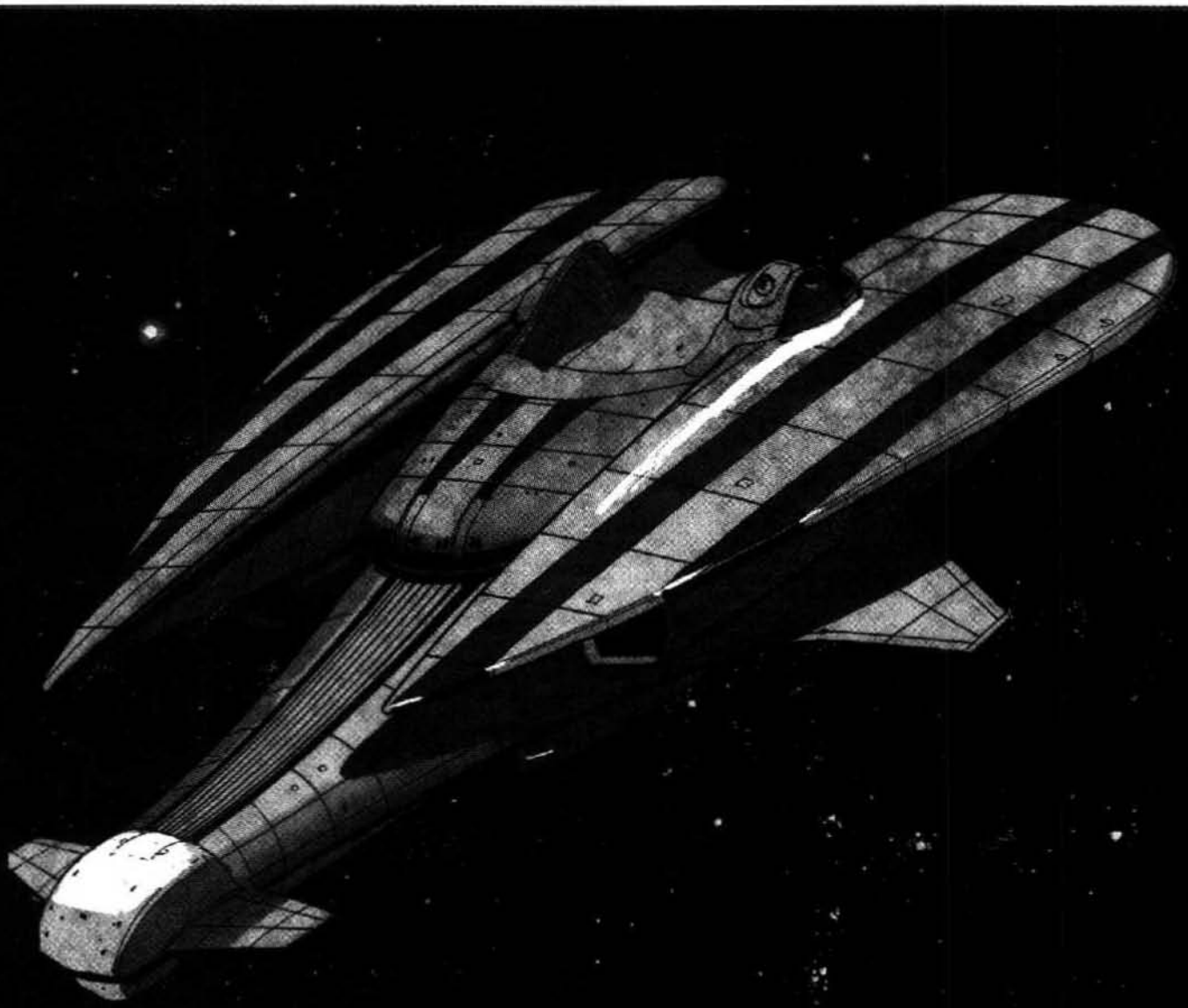
Cost in Mcr: 413.1
Passengers Low: 0
Tech Level: 12

9 Size Rating
4 Fire Control Rating
4 x L Battery - 3, 3, 3, 2
4 x Msl Battery 20 (20)
10 x L Battery - 2, 2, 0, 0

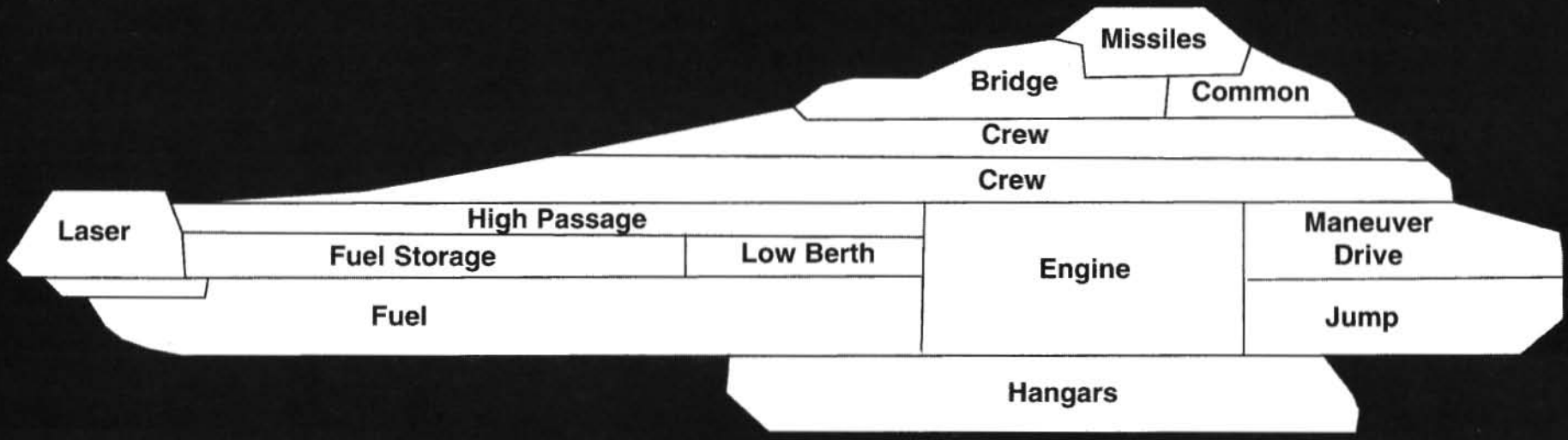
3 Jump Rating
3 G Rating Thruster Plates
6 Power Plant Rating
233 Fuel Rating /S /R
5 (150) Sand Caster Rating
10A 4P 10J Sensor Rating
10 Armor 18 Structure

Ship's Boat
High Passengers are actually onboard Marines

The Destroyer is the mainstay of the Imperial Fleet. It is a very versatile, well-rounded ship with good offensive capabilities. Destroyer Squadrons are deployed throughout Imperial space, and are always escorts to the much larger Auxiliary Carriers. Their onboard Marines are used for internal security of the ship, as well as search and seizure raids or boarding parties. The ship is capable of atmospheric entry and landing, but is rarely called upon to do so. The hangar bay for the Ship's Boat is configured to be able to handle 20 tons of fighter (either one medium or two light fighters), should the need arise. The Destroyer is the most versatile of all of the ships in the Fleet, and is used for any job which does not require a fleet to handle.



# Military Destroyer



## Light Fighter

Tons:10
Crew: 1
Cargo: 1

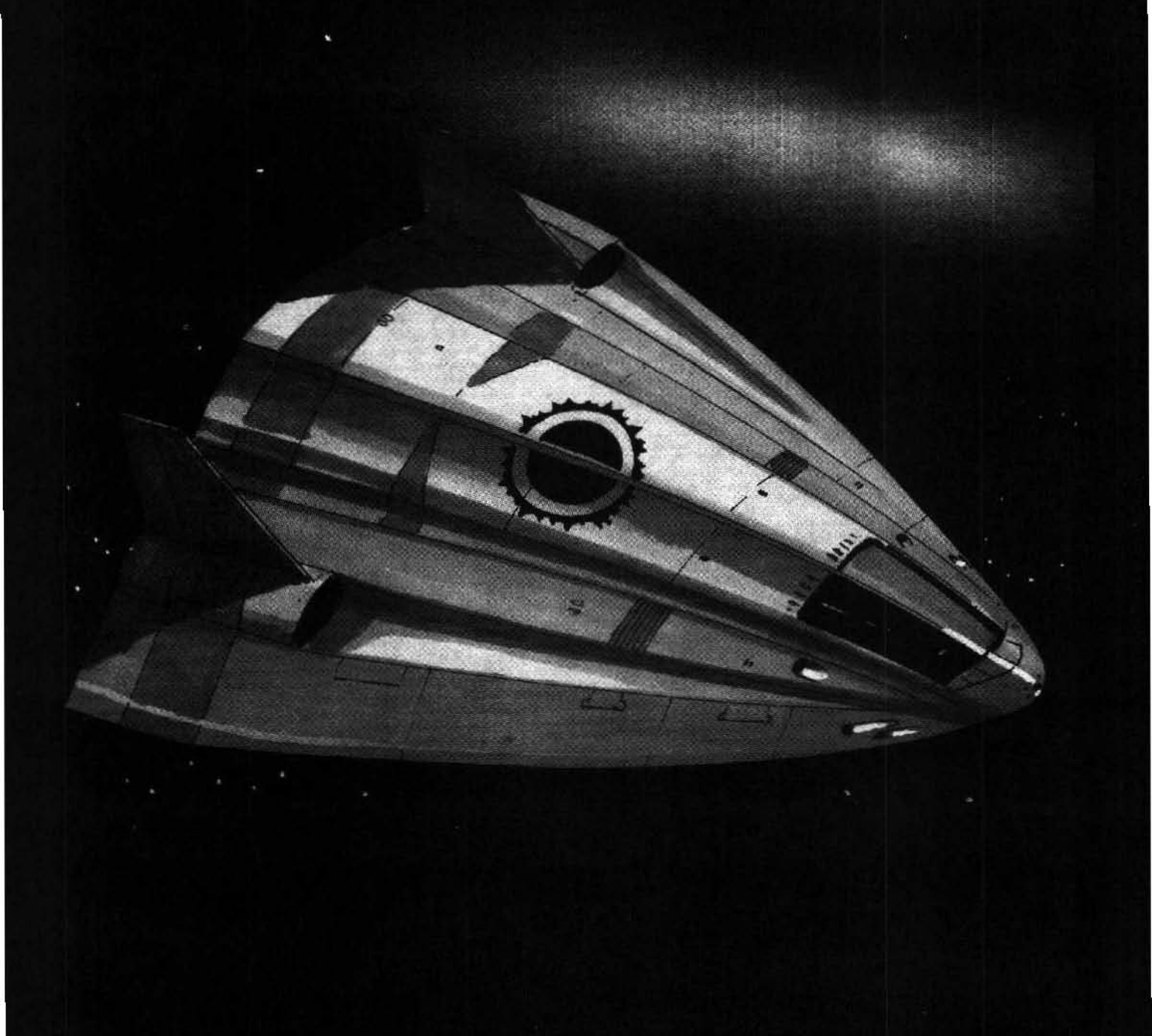
Volume: 140
Passengers High/Medium: 0
Controls: Military Standard

Cost in Mcr: 18
Passengers Low: 0
Tech Level: 12

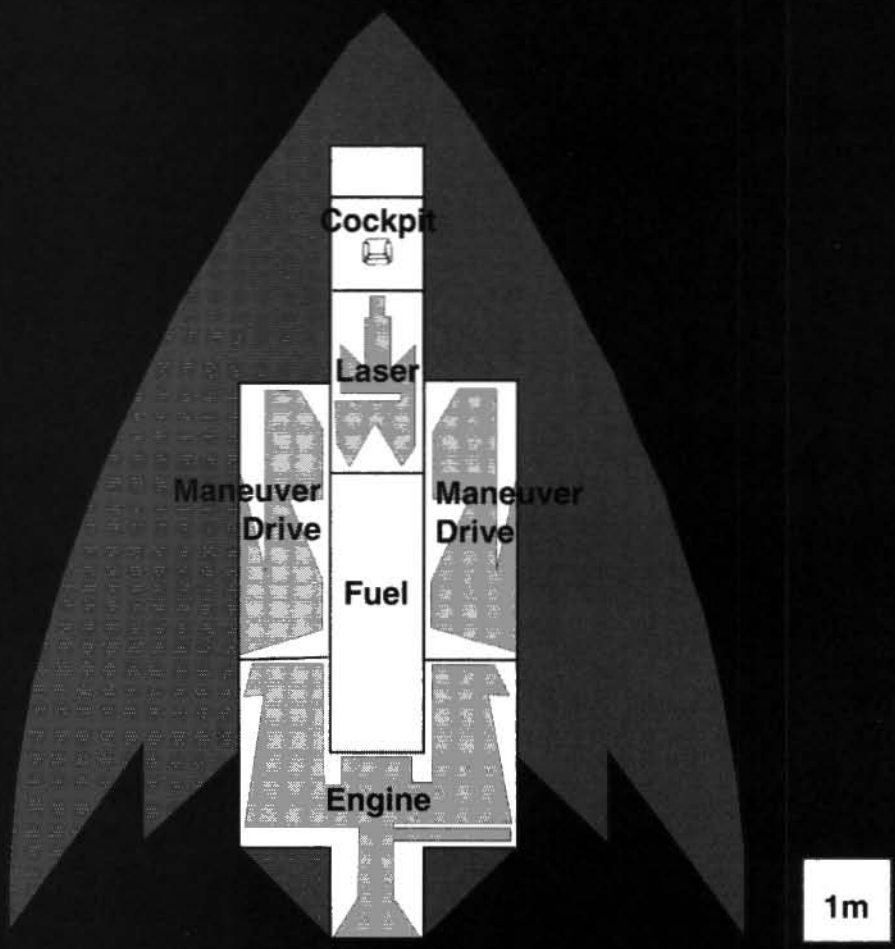
7 Size Rating
1 Fire Control Rating
L Battery - 2,0,0,0

0 Jump Rating
6 G Rating
6 Power Plant Rating
10 Fuel Rating/ Scoop/ Refine
5A 2P 2J Sensor Rating
8 Armor 2 Structure

The Light Fighter was introduced using the new Imperial Technology as a brand new class of fighting ship. It is the smallest high-G fighting ship in the Imperial inventory, and can do devastating damage to lightly armed or unarmed vessels. The Imperial Fleet has jumped at the new technology, and is fielding many light fighters. The vessels are used primarily for combat missions against inferior enemies, although its airframed hull makes it capable of operations against atmospheric fighters.



# LIGHT FIGHTER



## Medium Fighter

Tons: 15
Crew: 1
Cargo: 1

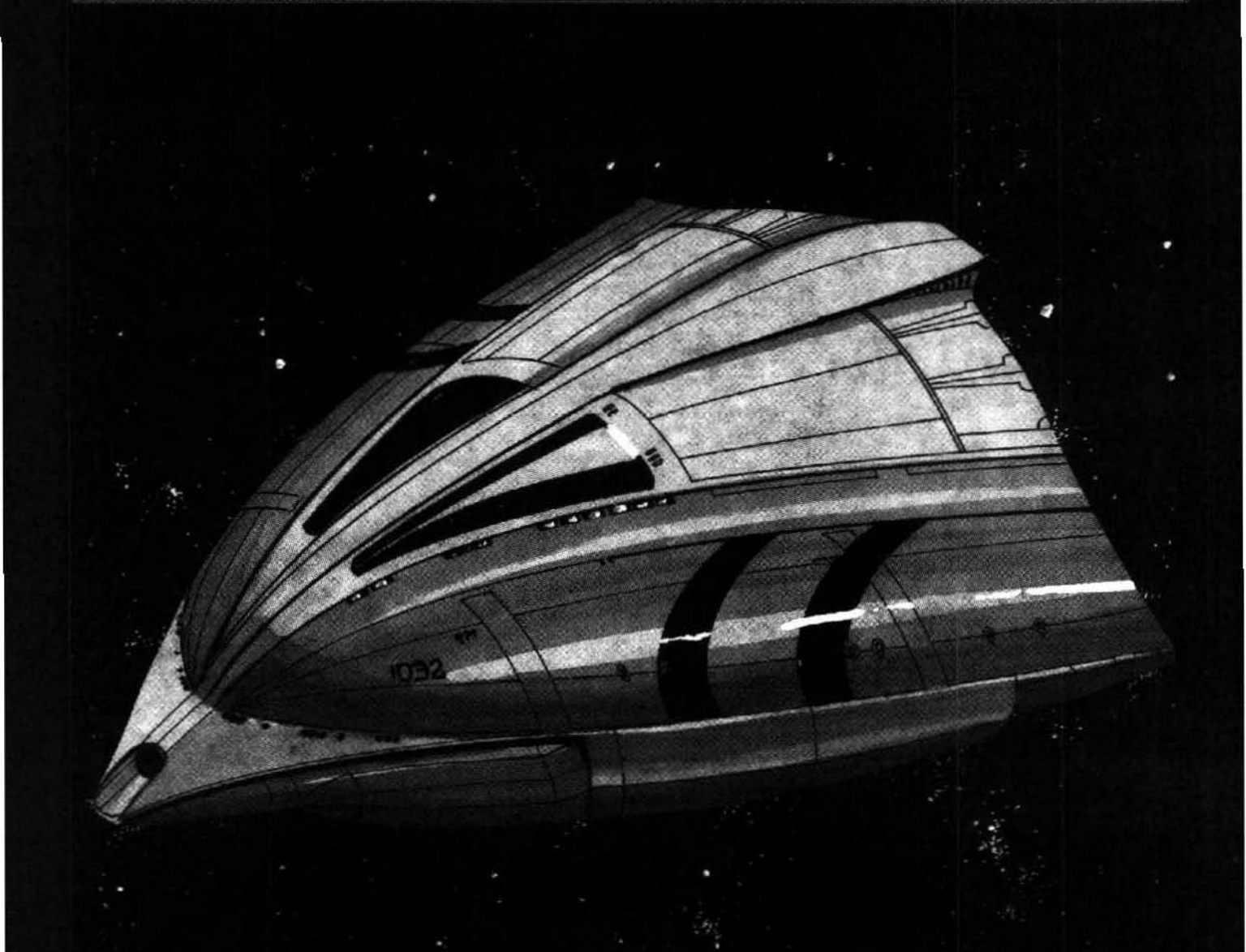
Volume: 210
Passengers High/Medium: 0
Controls: Military Standard

Cost in Mcr: 24
Passengers Low: 0
Tech Level: 12

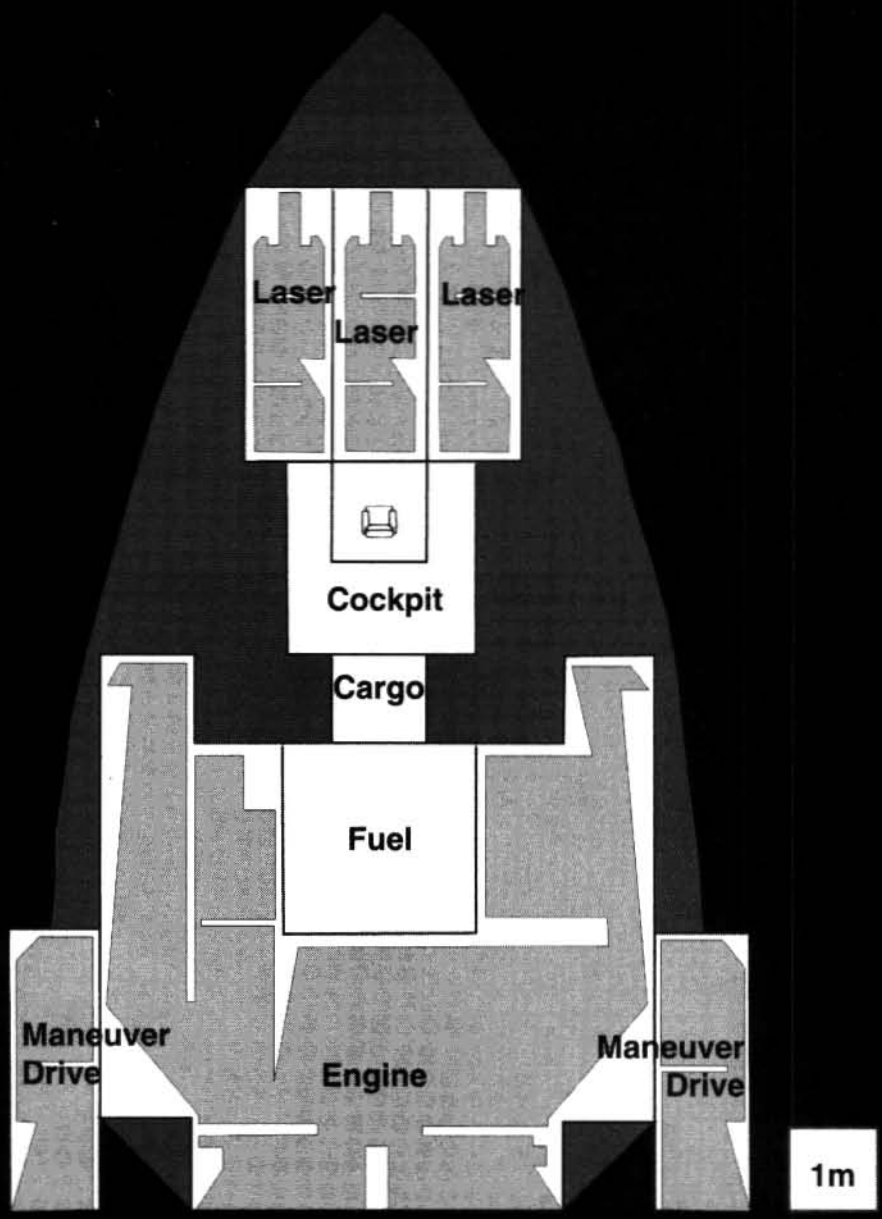
7 Size Rating
1 Fire Control Rating
3 x L Battery 1 - 2,0,0,0

0 Jump Rating
5 G Rating
7 Power Plant Rating
12 Fuel Rating
5A 2P 2J Sensor Rating
8 Armor 2 Structure

The Medium Fighter has been in service almost as long as the light fighter. Its design stemmed from the need to have a massively damaging weapon system with a single crewmember. It is ideal for taking control of local space, and is a very intimidating sight to raiding pirates or running smugglers. It, too, is capable of atmospheric flight, but its lower G rating make it less effective than a suitably armed atmospheric fighter. The Medium Fighter relies on a combination of maneuverability and heavy firepower to achieve its missions.



# Medium Fighter



## Heavy Fighter

Tons: 30
Crew: 2
Cargo: 1

Volume: 420
Passengers High/Medium: 1
Controls: Military Standard

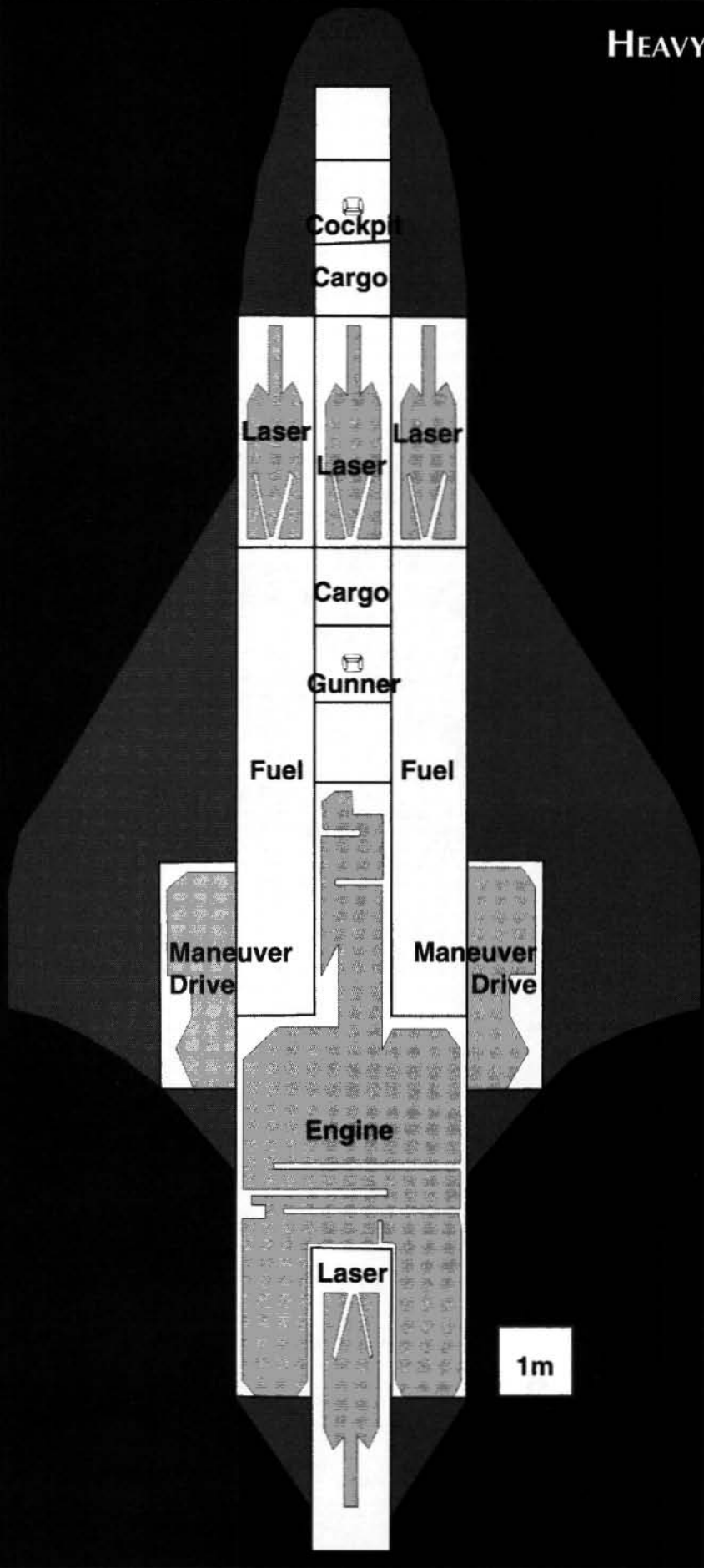
Cost in Mcr: 34
Passengers Low: 0
Tech Level: 12

7 Size Rating
2 Fire Control Rating
1 x L Battery 1 - 4, 2, 0, 0
3 x L Battery 2 - 2, 0, 0, 0

0 Jump Rating
4 G Rating
7 Power Plant Rating
14 Fuel Rating
5A 2P 2J Sensor Rating
12 Armor 2 Structure

The Heavy Fighter is the punch behind the Imperial Fleet's new Space Control arm. The fighter was introduced only recently, due to a need to take on Capital Ships with fast fighters, yet still be capable of defending itself from small enemy ships or atmospheric fighters. The addition of an extra crewmember allows the pilot to concentrate on a target while the rear gunner keeps would-be attackers at bay.

# Heavy Fighter



## Missile Bomber

Tons: 30
Crew: 4
Cargo: 4

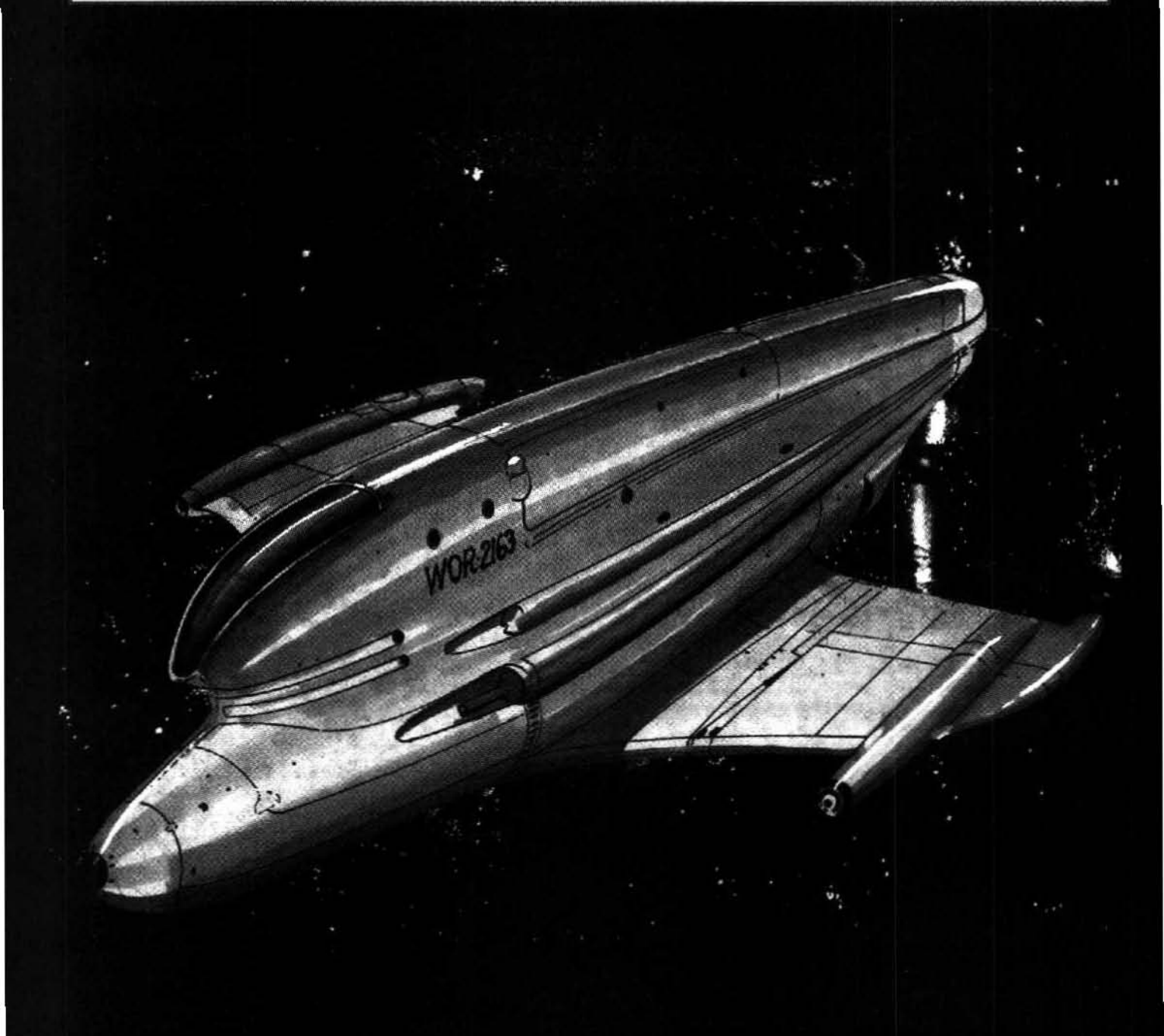
Volume: 420
Passengers High/Medium: 1
Controls: Military Standard

Cost in Mcr: 38
Passengers Low: 0
Tech Level: 12

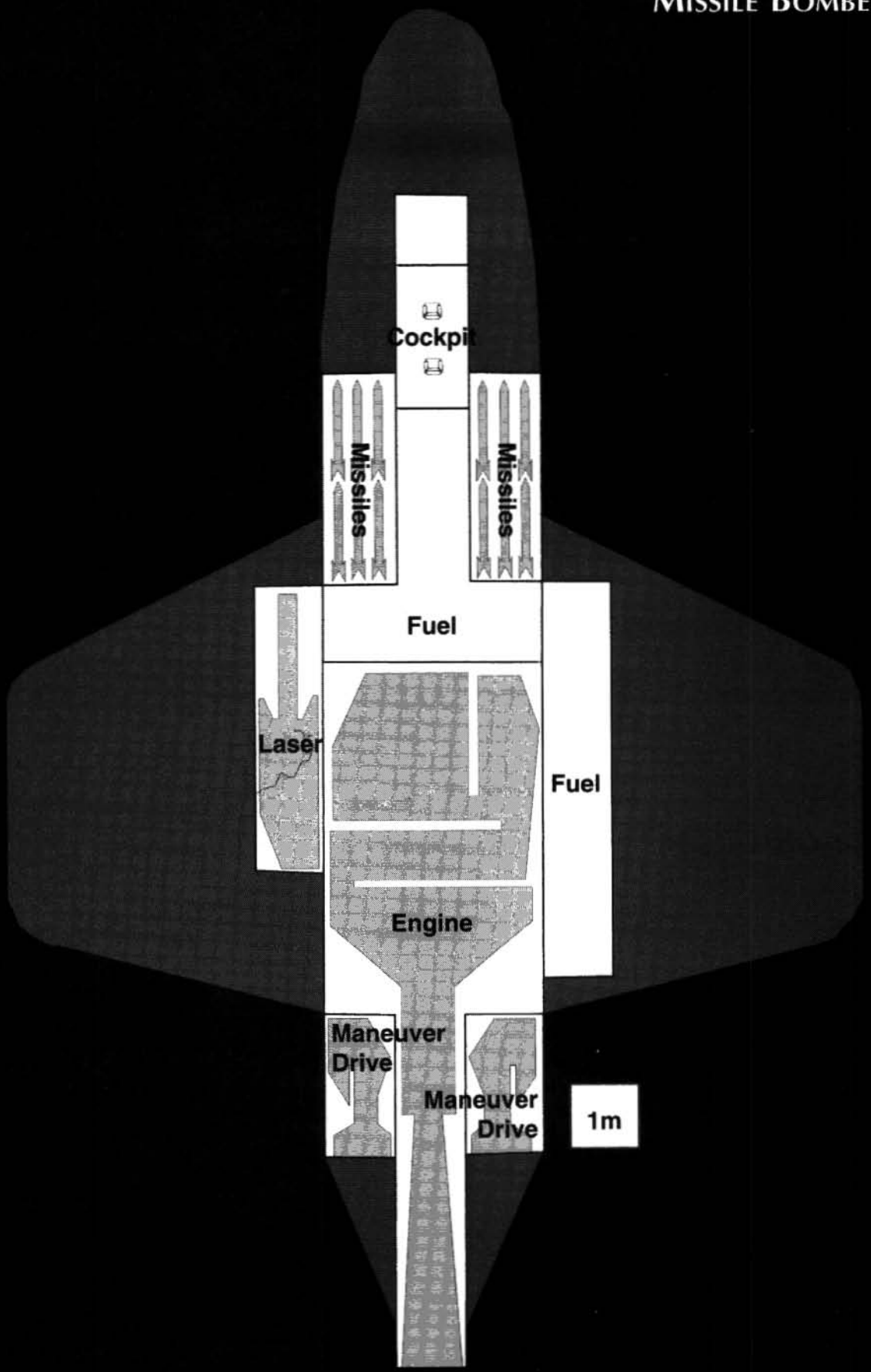
7 Size Rating
1 Fire Control Rating
1 x L Battery - 2, 0, 0, 0
2 x Msl Battery - 5 (30)

0 Jump Rating
3 G Rating
7 Power Plant Rating
18 Fuel Rating
5A 2P 2J Sensor Rating
12 Armor 6 Structure

The Missile Bomber is, in fact, a modified Heavy Fighter, but with most of the laser fire control and laser turrets removed. The bomber is the mainstay of the Fleet's long-range strike capability, and can hit targets at long distance in either space or in atmosphere, delivering nuclear or conventional warhead missiles in a cheap package. The laser turret is used for defense, but there have been noted occasions where gunners have actually scored Capital Ship hits that made a difference. The missile bomber has an extra capability of carrying small cargoes and a passenger. Emperor Cleon I has been seen arriving at the Imperial Naval Depot in one, reportedly claiming that even a Cruiser could not keep him as safe.



# Missile Bomber



# THE STANDARD SHIP DESIGN SYSTEM

Certain situations in **Traveller** call for a different ship design than those provided. The Standard Ship Design System (SSD System) is a simple way of customizing and designing starships for **Traveller**. Ships designed with the SSD System are starships assembled at the shipyard from standardized components.

The standardized components make starships constructed using this system cheaper than custom-designed ships. Starships designed under the SSD System receive a 10% discount over the equivalent custom-built ship. The design tables show the undiscounted list price of the components. When the ship design is completed, multiply all the final cost by 90% to reflect the discount for the mostly standardized, modular construction.

## THE DESIGN SEQUENCE

The goal of the design sequence is to fill in the Universal Ship Profile (USP) of the new ship. This will provide all of the necessary details of the ship, from its cargo capacity to its fighting weaponry and defenses.

Starship designing is a process of following the sequence below. Use the starships worksheet for the design. When the USP is completed, the ship has been completely designed.

The chosen hull will determine the total volume (in displacement tons) of the vessel. All systems must fit in the volume of the ship hull. The surface area of the ship is also critical to determining the type and number of external fittings on the ship. The surface area of added equipment and fixtures cannot exceed the total available surface area of the ship.

1. Select Mission
2. Select Hull
3. Calculate Volume and Surface Area Available
4. Select Jump Drive
5. Select Maneuver Drive
6. Select Offensive Weapons
7. Select Defensive Weapons
8. Select Controls and Electronics
9. Select Life Support
10. Select Miscellaneous Features
11. Select Power Plant
12. Calculate Passenger Capacity and Crew Requirements
13. Add Bridge and Workstations
14. Calculate Cost
15. Complete the USP

### Step 1 Select Mission

Select the Tech Level and mission for the ship. This will determine how the ship will be equipped. For example, a long-range military ship will require a bigger hull and greater jump drives, not to mention weapons, whereas an intrasystem cargo vessel may only require a short jump drive, lots of cargo space, and no weapons. The ship's mission will dictate the requirements for weapons, defenses, passengers, and cargos. The Tech Level of the ship sets the maximum tech level of any components in the ship. The ship may have inferior technology aboard if the designer so chooses.

### Step 2 Select Hull

The mission determines the size of the ship's hull, which in turn determines the amount of equipment, weapons, passenger and cargo space available. There are nine different types of hull configuration available for starships. Each provides a different amount of surface area and internal displacement available for use, and have different associated costs. Some are better at entering atmosphere, while others are superior at maximizing volume. The different hull types are:

Open Frame Hull
Needle Hull
Wedge Hull
Cylinder Hull
Box Hull
Sphere Hull
Dome/Disk Hull
Close Structure Hull
Slab Hull

### Step 3 Calculate Volume and Surface Area Available

Select the size in displacement tons (1 ton is equivalent to 14 cubic meters), configuration, and any streamlining. Not all types of streamlining are available for all configurations. The "Price Mods" entry on the hull size tables will indicate the options available, or "n/a" for no option. Also choose the maximum acceleration (in Gs of acceleration) the ship is capable of and the armor level. Find the hull displacement on the appropriate configuration chart.

Under Volume Factor, find the column for the tech level, and find the row for the displacement. Multiply the number there by the maximum Gs to determine the amount of hull volume (in $m^3$) that is dedicated to the internal structure of the ship.

Multiply that same Volume Factor by the armor level desired for the volume taken up by the armor. If an "Airframe" hull is desired, multiply the result by 1.3.

The Material Type table shows the material of the hull at each tech level. Find the row for the tech level. Multiply the structure volume just calculated by the density number in the Material Type table for how much the structure masses. Likewise, multiply the structure volume by the cost number in the Material Type table to find out the cost. Do the same with the armor volume to find the armor mass and price. The amount of streamlining affects the price of the armor. At the top of the Hull Size table are price modifiers for different streamlining. Multiply the armor price just calculated by the price modifier for streamlining.

The ship requires a certain number of airlocks. The Airlocks portion of the table shows how many are needed, and the total mass, volume, power and price they take up. For hulls less than 50 displacement tons, airlocks are optional.

Record the mass, volume, and price for both the structure and armor. Also note the total volume and area available. Note that Airframe (AF) streamlining also increases the surface area available — multiply the listed number by 1.3.

### Step 4 Select Jump Drive

Decide the Jump capacity for the ship (limited by tech level).

On the Jump Drive Size table, find the ship's size, then go across to the column under the required jump number. This is the volume the jump drive requires. Also listed is the price and mass. Calculate the surface area the drive requires by dividing its volume by 3.

At the end of the row is a column that lists how much fuel is needed for a jump of one parsec. Multiply that by the jump rating of the ship to determine how much fuel needed for a full jump. If more than one jump is needed, include more fuel.

Record mass, volume, area and cost, as well as the Crew Factor.

## Step 5 Select Maneuver Drives

Decide how many Gs of acceleration the ship requires. You should have decided this under Hulls, since it affects the hull structure.

Decide type of drive to use, consistent with the tech level.

Multiply the hull size, in displacement tons ($T_d$), by 10xGs to determine the thrust required. Find the value in the thrust column where the thrust is greater than or equal to what is needed. That row is the drive that will give the desired performance.

Note the fuel requirement per hour. Multiply by the number of hours of sustained travel at full acceleration to get the volume required for fuel. Merchant vessels can get by with 40-60 divided by their maximum acceleration. Warships require more. Remember that Thruster Plates do not require fuel.

Note the power requirements of the drive. If the number is in parentheses—like (10)—then that is how much excess power the drive produces that is available to other systems.

Note the Crew Factor the drive requires. This is used later to determine the crew requirements for the ship.

Record how much volume the drive and fuel require, and how much is still available. Also record the surface area taken up by the exhaust ports.

**ContraGravity (Tech Level 9+)**

ContraGravity drives are not real maneuver drives, and aren't useful outside of a gravity well. Their primary use is gravity vehicles. They are included here so that ships below tech level 11 (thruster plates) can hover and maneuver in an atmosphere. By 10 diameters out from a planet, the ContraGravity drive is virtually worthless, only producing 1% of the thrust it would on the surface. Note that the accelerations listed can only be achieved in a 1G gravity well. Ships that use ContraGravity still need another form of maneuver drive to get out to jump distance. Normally, only enough CG is installed to counter the mass of the ship (use 10x displacement tons as a rule of thumb).

**Fusion Drive (Tech Level 9)**

A fusion rocket is not much more than a fusion reactor with a steady stream of hydrogen going in one end and a hole in the other. Super-heated hydrogen plasma expelled at tremendous velocities forms the reaction mass. Because of the nature of the drive, the exhaust is extremely dangerous. It cannot be used within planetary atmospheres, and ships which intend to land must have some form of auxiliary drive, such as ContraGravity.

Other ships passing through the hydrogen wake will generally do so quickly enough that they won't suffer any ill effects, unless extremely close (~200km, referee's discretion). In that case, each crewperson must make a Formidable Endurance roll to avoid incapacitation by radiation (Difficult if wearing radiation-protective clothing), and each system on the ship suffers minor damage. All crew will require blood and bone-marrow therapy over the next several months to avoid long-term health problems. If the ship has sufficient sick-bay space, this can be done on board. Otherwise, it must be done at a local hospital.

Because of this effect, many systems have restrictions on using fusion drive within the local traffic area (10 planetary diameters). Restrictions range from strict control on when and where the drive may be aimed for course changes, to requiring the drive to be "run-rich," increasing the fuel flow tenfold to dilute the effects somewhat. This also reduces the drive's thrust.

Note that the fusion drive does not require power, it generates excess power for use by other ship's systems.

**High Efficiency Plasma Recombustion (HEPlaR) Drive (Tech Level 10)**

HEPlaR consists of a heat exchanger and recombustion chamber added to any power plant. Hydrogen is injected into the recombustion chamber, where the power plant heats the hydrogen to a plasma state, causing a small fraction of the hydrogen to undergo damper-mediated fusion. The plasma is then released as a high velocity stream of reaction mass, providing thrust.

Note the power required from the HEPlaR Drives table and make sure it's included in your power requirements when you select a power plant. The prices and volumes may seem like a bargain compared to the other drives, but remember, you still need a power plant!

**Thruster Plates (Tech Level 12+)**

Another effect of the tech level 12 mastery of gravitics (the science of gravity) is the invention of thruster plates. Earlier contra-grav technology only negates the effects of a gravitational field: thruster plates actually use the field itself for propulsion, by 'grabbing on' to the curvature of space and running along it much like an ant on the slope of a sugar-bowl. Rather than wasting valuable mass by hurling it out the rear of the ship, as lower-tech rockets do, gravity drives use the stellar system itself as their reaction mass (much as a train pushes against its track, and the planet below, rather than by expelling exhaust). A small change in a star's momentum translates to a huge velocity change for the much smaller spacecraft.

Unlike the ant of the earlier example, however, the slope of the "bowl" has a different effect on gravitic-drive ships. They depend on the slope for propulsion. Beyond a certain point, quantum-gravitic effects drastically reduce the efficiency of a gravitic-drive ship by a factor of a hundred or more, and thus they cannot maneuver effectively in deep-space unless they have an auxiliary drive, though they can remain there while, for example, computing jump parameters. The cutoff parameter turns out to be around 2,000 solar radii. Beyond this point, thruster plates are virtually worthless for anything beyond stationkeeping, and some alternate form of propulsion is needed. Thus, the Drenid Deep Space Research Facility in Sylea system is still resupplied using an automated freighter driven by a fusion rocket.

Another disadvantage of thruster plates is their gravitic and visual signature: gravity-wave sensors can easily detect the peculiar emissions characteristic of the system. Normal telescopic sensors are approximately as useful: the 'thruster plates' themselves give off exotic particles, which very quickly decay as they leave the thruster field. The bright blue glow emanating from the rear of many new Imperial vessel is, perhaps, more distinctive than the subtle space-warp.

## Step 6 Select Offensive Weapons

Select any weapons that the ship will carry. They must be placed in either turrets, bays or spinal mounts. Record their volume, mass, area, power, price and Crew Factor

Group any chosen turrets into batteries. All weapons in a single battery must be identical. Record their volume, mass, area, power, price and Crew Factor

For each battery, install a Master Fire Director to control it. Record their volume, mass, area, power, price and Crew Factor. Single turrets, while considered a battery of 1, don't require a Master Fire Director (MFD). However, in combat they only get a

Fire Control rating of 1 without an MFD. All bays and spinal mounts count as separate batteries, and have MFDs built in.

Particle Accelerators weapons use powerful electrical and/or magnetic fields to accelerate ions or charged subatomic particles to near-relativistic speeds, and to focus these particles into a concentrated beam that retains its power density over long distances. Because neutral (uncharged) particles can't be affected by electrical or magnetic fields, they're charged while they are accelerated. Unfortunately, charged particle accelerator weapon (CPAW) are useless in space combat — all the like-charged particles repel each other and the beam quickly loses focus and falls apart. By having a device at the end of the barrel to neutralize the particles again (either by adding an electron to a positive ion, or stripping the extra electron from a negative ion), you convert the weapon to a neutral particle accelerator weapon (NPAW). These weapons are much more useful for combat in space, where the CPAW is ideal for targets within an atmosphere.

Meson Guns are an extremely advanced form of particle accelerator, becoming available by Tech Level 11. Instead of simply firing subatomic particles at the target, the particles are made to collide, resulting in another kind of particle, the meson. Since mesons don't interact with normal matter, they pass right through armor or anything else. However, they have a very short life span, and when they decay, they produce radiation and damaging particles. By accelerating the original particles to carefully-calculated relativistic speeds, one can precisely control the decay so that it occurs within the target.

For all weapon charts, there are four range bands listed. Each entry has a range (in tenths of a light second), a penetration value for lasers only, and a damage value (R: P/PP - DD). For the Basic Ship Combat System, only the range and the damage values are needed for the USP values of the weapons.

Note that lasers below TL13 are turnable, and all use gravitic focusing to increase their range; TL13+ lasers are straight x-ray lasers. Those marked with an * don't use gravitic focusing (for more powerful lasers at short range, but with reduced long range performance). Those without an * use gravitic focusing to ensure lethality is preserved at longer ranges, but limited by the larger size of the focal array required for the gravitic mechanism.

**Turret Weapons**

Turrets can be

- Empty (reserving space for later)
- Laser, or
- Missile

The rate of fire of any turret can be increased up to ROF 100 by increasing the power usage by the same factor. This will increase combat performance by increasing the final rating of the weapon.

*Empty Sockets*

These can be installed in a ship to reserve space for weapons to be added later, by the purchaser of the ship. They require no power or crew, and cost nothing, but some power should be reserved for whatever weapon is expected.

**Bay Weapons**

Bays may be installed as desired, up to the surface area.

*Laser Bays*

Note that bays include a built-in MFD, but no workstation. Workstations for bays are allocated under step 13 as for MFDs. All of these weapons are grav-focussed. Also note that the weapons do not fill the entire bay; the bay size was chosen to allow the proper surface area for the focal arrays.

The rate of fire of any bay can be increased up to ROF 100 by increasing the power usage by the same factor.

*Missile Bays*

The Launchers column specifies how many individual launchers are contained within the bay. The column Reloads per Launcher shows how many ready missiles are available per launcher.

**Spinal Mount Weapons**

The Spinal Mount tables list the length of the weapon; the ship must be at least this long.

## Step 7 Select Defensive Weapons

Choose from the available defenses:

- **Nuclear Dampers** – Simply choose the one with the defensive factor you want.
- **Meson Screens** – Choose the protective value you want, then find it on the Meson Screens table under your ship's size category.
- **Sandcasters** – Sandcasters are just like turret weapons, in that they can be aggregated into batteries. Choose how many batteries you want, and how many sandcaster turrets should be in each. Install the sandcasters, and one Master Fire Director per battery.
- **Tractor/Repulsors** – Choose what strength you want, then find the system on the chart.
- **Black Globes**

For each chosen system, record the mass, volume, price, power, antenna area and crew requirements.

## Step 8 Select Controls and Electronics

Control systems include control consoles from which the crew of a ship controls its systems, and the interior circuitry linking the ship's electrical and mechanical systems to those controls. Installed computers must be from the same tech level as the controls, and avionics and navigation aids may not be installed from a tech level higher than that of the controls

This step provides systems for Basic Controls (the interior circuitry linking the consoles to the electrical and mechanical systems) and Electronics Packages (communications, sensors,computers, avionics and navigation aids). The consoles used by the crew will be installed as part of step 13, since the number needed will depend on the number of crew members.

There are three different levels of automation available. Low automation means there is no interconnection between different ship's systems. While this provides the most security (even if one system is broken into, you can't go anywhere else, and failures stay isolated), it also requires the most crew for the ship. Standard automation provides basic communications links between different systems, allowing data to be passed back and forth, but limits how much influence one system has on another. High automation means everything is highly interconnected, processors are shared, and any system can control any other. Naturally, this allows the smallest crews, but makes the ship the most vulnerable — damage to one system, or hackers breaking in, can spread to other systems. Theoretically a hostile individual could take complete control of the ship.

Military ships, with their need for damage resistance and security, usually use Standard automation, as do exploration vessels and merchant ships venturing into risky territory. Civilian ships and merchants plying safe, well-known space go with High automation to maximize cargo space and minimize crew costs. Finally, ships designed in the "New Era" milieu, set in Imperial Year 1200 after the fall of the Imperium use Low automation out of fear of computer viruses.

Find the hull size of the ship on the table, find the tech level of controls required, and copy the mass, volume, power, price and crew information to the worksheet.

The basic controls listed are for a low level of automation (no interconnection between different ship's systems). For Standard automation, increase the values listed by 5%. For High automation, increase them by 15%.

**Electronic Packages (Comm/Sensor)**
Choose an electronics package. If additional systems are required beyond what is in the pre-defined packages, an add those items individually.

*Minimum Capability*
This is the minimum required for safe operations. It contains a short-range radio for communicating with Traffic Control and other ships nearby in orbit, avionics necessary for landings, a short-range radar for landing, a passive sensor package, and three computers. There's no way to communicate with somebody out of orbit, no private link, and no redundancy for battle-damage.

1x 3,000km Radio
1x 3,000km Radar (tech level8-9) or Active EMS (tech level10+)
1x 30,000km High Resolution Thermal (tech level8-9) or Passive EMS (tech level10+) fixed array
3x tech level-x Standard computers
tech level-x Flight Avionics

*Standard Civilian*
This is the most common package for small private and merchant vessels. It has a longer-range radio for broadcast communications in "immediate area" (1/10th of a light second), a maser communicator for tight-beam private communications, radar, passive sensor package, and avionics. There is no redundancy for battle-damage.

1x 30,000km Radio
1x 30,000km MaserComm
1x 30,000km Radar (tech level8-9) or Active EMS (tech level10+)
1x 60,000km HRT (tech level8-9) or PEMS (tech level10+) fixed array
3x tech level-x Standard computers
tech level-x Flight Avionics

*Advanced Civilian*
This package increases the ranges for communicators and sensors

1x 300,000km Radio
1x 1,000AU MaserComm (except at tech level8: only 300,000km range)
1x 60,000km Radar (tech level8-9) or 1x120,000km AEMS (tech level10+)
1x 120,00km HRT (tech level8-9) or PEMS (tech level10+) fixed array
3x tech level-x Standard computers
tech level-x Flight Avionics

*Exploration/Survey*
This package is for scout vessels and others needing to perform detailed sensor sweeps. It has a long-range radio, two tight-beam communicators for links with small craft, and a bevy of sensors.

1x 300,000km Radio
3x 1,000AU MaserComm (at tech level8, only 300,000km)
2x 60,000km Radar (tech level8-9) or 2x 300,000km AEMS (tech level10+)
2x 120,000km HRT (tech level8-9) or PEMS (tech level10+) fixed array
1x Densitometer (tech level11+ only)
1x tech level-x Neural Activity Sensor (tech level13+ only)
1x Neutrino Sensor (tech level10+ only)
3x tech level-x Standard computers
tech level-x Avionics

*Military*
This package is used for military vessels, and includes redundant combat-range sensors, hardened computers, and ECM

2x 300,000km Radio
2x 1,000AU MaserComm (300,000km at tech level8)
1x 300,000km LaserComm (for controlling missiles)
2x 60,000km Radar (tech level8-9) or 300,000km AEMS (tech level10+) (Note: power requirements only allow one of these to be powered up at a time.)
1x 120,000km PEMS folding array. (Note: This system can't be used while maneuvering.)
1x 60,000km Radar Jammer (tech level8-9) or 300,000km AEMS Jammer (tech level10+)
3x tech level-x Fiber Optic computers
tech level-x Avionics

**Electromagnetic Masking (Tech Level 10+)**
Electromagnetic Masking is an advanced form of stealth design, and includes radiators to dissipate enormous IR signatures as well as more advanced electromagnetic absorbing material. EMM packages may be installed only to replace stealth.

## Step 9 Select Life Support

Find the hull size on the Life Support table and note the requirements.

**Artificial Gravity/Inertial Compensators**
Find the hull size on the AG/IC table, and note the requirements.

## Step 10 Select Miscellaneous Features

**Small Craft & Launch Facilities**
Reserve space for small craft; also record their crew information here since they'll need to be quartered aboard. A spacious facility allows all maintenance and repairs on small craft; minimal facility increases task difficulty for repairs by one level; docking rings will fit small craft with no extra space, so on-site repair is not possible. Maintenance (Mx) crew factor is the mass of the carried craft divided by 500.

**Cargo**
Any available space remaining may be designated as cargo. Simply record the volume. Cargo requires no additional power. Cargo hatches are required: one large cargo hatch per $350m^3$ of cargo, or one small hatch if the total cargo space is under $100m^3$.

**Fuel Scoops**
A ship may be outfitted with special "scoops" and internal equipment to allow it to skim the free raw materials of liquid hydrogen (LHyd) from oceans or gas giant atmospheres. They do not take up any volume, or add mass to the ship. They do take up surface area. For every 5% of surface area dedicated to fuel scoops, the ship can scoop fuel equal to 20% of its total maximum fuel volume in an hour. Cost is MCr0.000075 per cubic meter of hull.

**Purification**
While fusion reactors and jump drives run on hydrogen, fuel skimmed from an ocean is water, and fuel from a gas giant is contaminated with a variety of other substances. Fusion reactors tolerate this moderately well; jump drives are a little more finicky, and are more likely to misjump if burning unrefined fuel. A fuel purification plant removes those impurities to produce pure liquid

hydrogen. If the ship requires fuel purification, select a table from the list below for installation in the ship. The purification rate listed is the amount of fuel that can be processed in 6 hours.

## Step 11 Select Power Plant

Determine how much power is need. Each step to this point has a power requirement. Total all of the power requirements.

Using the appropriate chart from the Fission/Fusion Plant tables, pick enough power plants to generate at least as much power as you've used so far. Note that using multiple power plants gains you redundancy.

Set aside enough space for the fuel the plant needs.

Record everything and proceed to the next step.

## Step 12 Select Passenger, Capacity and Crew Requirements

The crew factors noted in all of the above steps are for minimally automated ships. If no crew factor is listed for a system or feature, then it does not require crew.

Automation can assist in reducing the number of crewmembers needed to run a ship. The first level of automation is the collection of relevant data at a single console for a working system. Thus, a weapons bay, for example, would need fewer crew to man than an unautomated system. The second level of automation is the linking of whole systems together across the ship. Fewer crew are needed to run the ship, but the ship becomes more vulnerable to accidental damage, hostile action (from weapons fire or enemy hackers.)

Total up all the crew categories currently listed on the worksheet.

These numbers are very "raw" – first they need to be modified according to the capabilities of the computers installed. Look up the "Control Modifier" on the appropriate table, and multiply Engineering (En), Electronics (El) and Maintenance (Mx) by it. Other categories are unaffected. These are basic crew numbers.

An automation level was chosen in the controls & electronics step: Low (no interconnection between systems), Standard (some level of interconnection between systems), or High (everything very tightly integrated). The basic crew numbers are modified as follows:

The crew numbers for Engineering only consider power plant crew. First, modify the PP crew according to the automation level : divide by 1.3 (low), 4 (standard), or 10 (high)

Next, determine the maneuver drive and jump drive crew based on the mass of the drives as recorded on the worksheet. Divide the volume in $m^3$ by 56 and multiply by the Control Modifier to get the basic crew, then divide by the drive automation factor: low=1, standard=2, or high=5. These crewmembers are also Engineering crew.

Maintenance crews are affected by automation as well. Divide the basic maintenance crew number by the drive automation factor also.

Meson gun and particle accelerator crews are also affected by automation. Divide the crew numbers listed in the tables by the weapon automation factor: low=1, standard=1.7, or high=2.8 Decide how many Ship's Troops are required.

Calculate Maneuvering Crew. If the ship only has a maneuver drive, only a pilot is required (Mn=1). If the ship has a jump drive, an astrogator is also needed (Mn=2).

For Command crew, add up all the crew factors and divide by 6, dropping any fractions.

Decide how many passengers are to be carried.

**High Passage**—The best method of travel is called high passage, with first class accommodations and cuisine. High passengers have the services of the ship's steward, entertainment, and complete attention to comfort.

**Middle Passage**— In order for starships to fill their staterooms with passengers, middle passage is offered on a standby basis, in the event that not enough high passages are sold. While middle passengers occupy staterooms similar to those used by high passengers, they do not receive the service or entertainment accorded the higher-paying passengers. Also, the quality of the cuisine is below that of High Passage. A middle passenger may be "bumped" and the stateroom taken by a late arriving high passenger; the middle passenger's ticket is returned, but no other compensation is made.

**Low Passage**—Transportation while in cold sleep (suspended animation) is possible at relatively low cost to the passenger. The passenger is placed in a low passage berth before the ship takes off, and travels the entire journey in a state of suspended animation. The passenger does not age, and requires very little life support. Unfortunately, the low passage system involves some intrinsic dangers to the passenger, and the passenger runs some risk of not surviving the voyage.

Assign stewards: one steward is needed for every 8 high passengers or command crew, and one per 100 middle passengers or remaining crew.

Assign medical crew: 1 is needed for every 20 low passengers, and one per 120 high or middle passenger, or crewmember.

Drop all fractions, except for categories that are less than one. Collect all those together, and add them up. If the result is greater than 1, there is an individual who has multiple jobs. Regardless of the results, any ship $100T_d$ and below can be run by one person, and ships up to $200T_d$ can be run by two persons.

Accommodations — choose appropriate accommodations from the list. High passengers require at least individual large staterooms, and middle passengers require at least individual small staterooms. Low passengers require a low berth. Crew can be assigned any kind of berth other than low berth, although it's customary for at least the captain, and on larger ships, his senior staff, to have individual staterooms. Emergency low berths can be installed (one for every four people) in case of emergencies.

## Step 13 Add Bridge and Workstations

If there are more than two command crewmembers, there must be a bridge on the ship. The bridge itself doesn't require extra room, it just requires larger workstations.

Command, Electronics, Maneuvering and any Master Fire Director gunners require either a bridge workstation (if there is a bridge), or a regular workstation (if not). Turret weapon crews have their workstations built into their weapon systems. Note that all bay and spinal weapons have an integral MFD, but still need the workstation.

The Engineering crew requires a regular workstation.

Note the only difference between a ship with or without a bridge is the volume. The only difference between tech levels is the price, and the automation factor in the automation table.

## Step 14 Calculate the Cost

The cost of the ship is determined by adding all of the costs of the various components together. This cost is discounted for the use of standardized components during assembly. Multiply the cost by 90% to calculate the final cost to the purchaser.

## Step 15: Complete the Universal Ship Profile

All of the information to create the Universal Ship Profile is now available. Fill in the ship design along with calculated values:

**Position in the USP** USP Rating.

**Tons** Enter the tonnage of the vessel, in standard displacement tons..

**Volume** Enter the volume of the vessel in cubic meters. Volume equals tonnage multiplied by 14.

**Cost** Total the cost of the ship in MCr, rounded to the nearest tenth, and enter it here.

**Crew** Enter the total number of the crew (including stewards and medics).

**High/Medium Passengers** Enter the total number of high or medium passengers carried.

**Low Passengers** Enter the number of low berths.

**Cargo** Enter the total volume of the ship's cargo holds, in displacement tons.

**Controls** Enter a short description of the ship's controls: "Std" for standard control systems, or "Fib" for military-specification fiber-optic systems. If the ship has a bridge, place "/Bridge" after the system type.

**Tech Level** Enter the controlling TL of the design (usually the TL of the ship's avionics).

**Size Rating** Enter the value from the Hulls table of the hull chosen.

**Fire Control** Listed in MFD table. For weapons without an MFD (single turrets), FC Rating is 0. List the highest rating available.

**Jump Drive** Jump number.

**Maneuver Drive** G-Rating.

**Power Plant** 2 * Total Output/Hull Displacement.

**Fuel Rating** Enter the number of displacement tons of fuel carried on board. Add a /S if fuel scoops are installed. Add a /R if fuel refining is installed.

**Meson Screen Rating** Enter the USP number from the meson screen table.

**Sand Caster Rating** Enter the number of sandcasters, and in parentheses, the total number of canisters carried in ready storage.

**Damper Rating** Enter the number of nuclear damper turrets installed.

**Active/Passive/ Jam Sensors** Enter the sensor's range for Active and Passive as the A and P USP values. All packages without jammers have a rating of 0 for jamming. Those packages listed as having jamming equipment use the Active USP value for their jamming USP value. Annotate the USP as having Stealth or EMM if the ship is equipped with either package.

**Weapons Batteries** For each distinct type of battery carried by the ship, make a battery entry consisting of the number of batteries of this type, a battery identifier (such as "Long-Range Laser" or "Missile Bay"), and the USP combat statistics.

Weapons values are listed by range in tenths of light seconds. For short range, take the damage value at 10 tenths of a light second, and convert the value with the USP Conversion Chart. For medium range, take the value at 20 tenths of a light second, long at 40 tenths of a light second, and extreme at 80 tenths of a light second. If the weapon doe not have a damage value at 10, 20, 40, or 80 tenths of a light second, the USP value for that range is 0. If the value of the damage converts to 0 for short range, then use the best damage value between 1 and 9 tenths of a light second, and all other range USP values will be 0.

Once the weapon is converted to USP values, multiply the USP values by the number of weapons in the battery. Add a Rate of Fire modifier as follows: If the weapon has a Rate of Fire less than 100, no modifier. For ROF of 100, +1; for ROF of 200, +2; for ROF of 400, +3; for ROF of 800, +4. Note that the ROF bonus cannot be greater than the battery's current damage rating (i.e. a weapon that converts to 2-0-0-0, with a ROF of 800, only gets a +2 bonus at short range and no bonus beyond that: 4-0-0-0).

If the ship is equipped with missiles, note the number of missiles in the battery in ready storage, and in parentheses, the number of missiles that can be controlled in flight at any one time.

**Internal Structure** Ship displacement (in disp tons [$T_d$]) times G-rating, then use the USD Conversion chart.

**Armor** Convert the armor value chosen using the USP Conversion chart below.

**Notes** Note additional information about the ship here, including the hull shape, streamlining, and details of any carried craft.

# Ship Design Worksheet

| Component | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Mx | En | Gn | El | Fl |
|---|---|---|---|---|---|---|---|---|---|---|
| **Hull** Config: Size: Streamlining: Armor: Max Gs: G Length: m | | | | | | | | | | |
| Internal Structure | | | | | | | | | | |
| Armor | | | | | | | | | | |
| Airlocks | | | | | | | | | | |
| **Drives** Jump Capacity: J Mdrive Type: Acceleration: G Reaction Fuel: hrs | | | | | | | | | | |
| Jump Drive | | | | | | | | | | |
| Jump Fuel | | | | | | | | | | |
| Maneuver Drive | | | | | | | | | | |
| Maneuver Fuel | | | | | | | | | | |
| ContraGravity | | | | | | | | | | |
| **Weapons & Defenses** | | | | | | | | | | |
| Turret Weapons – list type of turret, and number/battery organization (i.e. 3x5 is three batteries of five each, total of 15 weapons) | | | | | | | | | | |
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| | | | | | | | | | | |
| Bay Weapons | | | | | | | | | | |
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| | | | | | | | | | | |
| Spinal Mount | | | | | | | | | | |
| | | | | | | | | | | |
| Defenses | | | | | | | | | | |
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| | | | | | | | | | | |
| Master Fire Directors – one required per battery (weapon or sandcaster turrets) | | | | | | | | | | |
| | | | | | | | | | | |
| **Controls and Electronics** | | | | | | | | | | |
| Basic Controls | | | | | | | | | | |
| Electronics Package | | | | | | | | | | |
| Stealth or EMM | | | | | | | | | | |
| **Life Support** | | | | | | | | | | |
| Basic or Standard Life Support | | | | | | | | | | |
| G-Tank | | | | | | | | | | |
| Artificial Gravity | | | | | | | | | | |
| **Miscellaneous Features** | | | | | | | | | | |
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| **Power Plants** | | | | | | | | | | |
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| | | | | | | | | | | |
| | | | | | | | | | | |
| Power Plant Fuel | | | | | | | | | | |

| **Passengers and Crew** | Hp | Mp | Lp | Cm | Mn | Md | St | Tr | Mx | En | Gn | El | Fl |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Total crew so far* | | | | | | | | | | | | | |
| *times Control modifier* | | | | | | | | | | | | | |
| *times Automation modifier* | | | | | | | | | | | | | |
| *Add maneuvering crew and Ship's Troops* | | | | | | | | | | | | | |
| *Add all crew so far, divide by 6 for command crew* | | | | | | | | | | | | | |
| *Choose passengers* | | | | | | | | | | | | | |
| *Assign stewards and medical* | | | | | | | | | | | | | |
| *Total crew & passengers (dropping fractions)* | | | | | | | | | | | | | |
| Large Staterooms | | | | | | | | | | | | | |
| Small Staterooms | | | | | | | | | | | | | |
| Bunks | | | | | | | | | | | | | |
| Standard Low Berths | | | | | | | | | | | | | |
| Emergency Low Berths | | | | | | | | | | | | | |

## Sample Universal Ship Profile

Type and Name of Ship

| | | |
|---|---|---|
| Tons | Volume | Cost in Mcr |
| Crew | Passengers High/Medium | Passengers Low |
| Cargo | Controls | Tech Level |

## Size Rating
## Fire Control Rating
## Battery 1 - ##, ##, ##, ##
## Battery 2 - ##, ##, ##, ##
## Battery 3 - ##, ##, ##, ##
## Battery 4 - ##, ##, ##, ##
## Battery 5 - ##, ##, ##, ##
## Battery 6 - ##, ##, ##, ##
## Battery 7 - ##, ##, ##, ##
## Battery 8 - ##, ##, ##, ##

## Jump Rating
## G Rating / Maneuver Drive
## Power Plant Rating
## Fuel Rating / Scoop / Refine
## Meson Screen Rating
## Sand Caster Rating
## Damper Rating
## A ## P ## J (Mask) Sensor Rating

## Armor ## Structure

## Material Type and Tech Level

| Material Type | | Cost (MCr/$m^3$) | Density (t/$m^3$) |
|---|---|---|---|
| TL 8-9: | Composite Laminate | 0.008 | 8.0 |
| TL 10-11: | CrystalIron | 0.009 | 10.0 |
| TL 12-13: | Superdense | 0.014 | 15.0 |
| TL14-16: | Bonded Superdense | 0.028 | 15.0 |

## Open Frame Hull

Price Modifiers: No SL 0.3; SL n/a; AF n/a

| Size ($T_d$) | Size Code | Length (m) | Total Volume ($m^3$) | Surface Area ($m^2$) | Volume Factor TL 8-9 | TL 10-11 | TL 12-13 | TL 14-16 | Qty | Airlocks Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 7 | 28.0 | 140 | 190 | 0.63 | 0.48 | 0.27 | 0.14 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 20 | 7 | 32.0 | 280 | 230 | 0.77 | 0.58 | 0.33 | 0.16 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 30 | 7 | 36.8 | 420 | 270 | 0.90 | 0.68 | 0.39 | 0.19 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 40 | 7 | 41.6 | 560 | 310 | 1.03 | 0.78 | 0.44 | 0.22 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 50 | 7 | 44.8 | 700 | 380 | 1.27 | 0.95 | 0.54 | 0.27 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 60 | 7 | 46.4 | 840 | 420 | 1.40 | 1.05 | 0.60 | 0.30 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 70 | 7 | 50.0 | 980 | 460 | 1.53 | 1.15 | 0.66 | 0.33 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 80 | 7 | 52.8 | 1,120 | 510 | 1.70 | 1.28 | 0.73 | 0.36 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 90 | 7 | 54.4 | 1,260 | 550 | 1.83 | 1.38 | 0.79 | 0.39 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 100 | 8 | 56.0 | 1,400 | 600 | 2.00 | 1.50 | 0.86 | 0.43 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 200 | 8 | 68.0 | 2,800 | 900 | 3.00 | 2.25 | 1.29 | 0.64 | 2 | 0.4 | 6 | 4 | 0.002 | 0.010 |
| 300 | 8 | 80.0 | 4,200 | 1,200 | 4.00 | 3.00 | 1.71 | 0.86 | 3 | 0.6 | 9 | 6 | 0.003 | 0.015 |
| 400 | 8 | 88.0 | 5,600 | 1,500 | 5.00 | 3.75 | 2.14 | 1.07 | 4 | 0.8 | 12 | 8 | 0.004 | 0.020 |
| 500 | 8 | 96.0 | 7,000 | 1,700 | 5.67 | 4.25 | 2.43 | 1.21 | 5 | 1.0 | 15 | 10 | 0.005 | 0.025 |
| 600 | 8 | 100.0 | 8,400 | 2,000 | 6.67 | 5.00 | 2.86 | 1.43 | 6 | 1.2 | 18 | 12 | 0.006 | 0.030 |
| 700 | 8 | 108.0 | 9,800 | 2,200 | 7.33 | 5.50 | 3.14 | 1.57 | 7 | 1.4 | 21 | 14 | 0.007 | 0.035 |
| 800 | 8 | 112.0 | 11,200 | 2,400 | 8.00 | 6.00 | 3.43 | 1.71 | 8 | 1.6 | 24 | 16 | 0.008 | 0.040 |
| 900 | 8 | 116.0 | 12,600 | 2,600 | 8.67 | 6.50 | 3.71 | 1.86 | 9 | 1.8 | 27 | 18 | 0.009 | 0.045 |
| 1,000 | 9 | 120.0 | 14,000 | 2,800 | 9.33 | 7.00 | 4.00 | 2.00 | 10 | 2.0 | 30 | 20 | 0.010 | 0.050 |
| 2,000 | 9 | 144.0 | 28,000 | 4,300 | 14.33 | 10.75 | 6.14 | 3.07 | 20 | 4.0 | 60 | 40 | 0.020 | 0.100 |
| 3,000 | 9 | 168.0 | 42,000 | 5,700 | 19.00 | 14.25 | 8.14 | 4.07 | 30 | 6.0 | 90 | 60 | 0.030 | 0.150 |
| 4,000 | 9 | 188.0 | 56,000 | 7,000 | 23.33 | 17.50 | 10.00 | 5.00 | 40 | 8.0 | 120 | 80 | 0.040 | 0.200 |
| 5,000 | 9 | 204.0 | 70,000 | 8,000 | 26.67 | 20.00 | 11.43 | 5.71 | 50 | 10.0 | 150 | 100 | 0.050 | 0.250 |

## Needle Hull

Price Modifiers: No SL 0.7; SL 0.8; AF 1.2

| Size ($T_d$) | Size Code | Length (m) | Total Volume ($m^3$) | Surface Area ($m^2$) | Volume Factor TL 8-9 | TL 10-11 | TL 12-13 | TL 14-16 | Airlocks Qty | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 7 | 21.0 | 140 | 247 | 0.41 | 0.31 | 0.18 | 0.09 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 20 | 7 | 24.0 | 280 | 299 | 0.50 | 0.37 | 0.21 | 0.11 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 30 | 7 | 27.6 | 420 | 351 | 0.59 | 0.44 | 0.25 | 0.13 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 40 | 7 | 31.2 | 560 | 403 | 0.67 | 0.50 | 0.29 | 0.14 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 50 | 7 | 33.6 | 700 | 494 | 0.82 | 0.62 | 0.35 | 0.18 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 60 | 7 | 34.8 | 840 | 546 | 0.91 | 0.68 | 0.39 | 0.20 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 70 | 7 | 37.5 | 980 | 598 | 1.00 | 0.75 | 0.43 | 0.21 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 80 | 7 | 39.6 | 1,120 | 663 | 1.11 | 0.83 | 0.47 | 0.24 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 90 | 7 | 40.8 | 1,260 | 715 | 1.19 | 0.89 | 0.51 | 0.26 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 100 | 8 | 42.0 | 1,400 | 780 | 1.30 | 0.98 | 0.56 | 0.28 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 200 | 8 | 51.0 | 2,800 | 1,170 | 1.95 | 1.46 | 0.84 | 0.42 | 2 | 0.4 | 6 | 4 | 0.002 | 0.010 |
| 300 | 8 | 60.0 | 4,200 | 1,560 | 2.60 | 1.95 | 1.11 | 0.56 | 3 | 0.6 | 9 | 6 | 0.003 | 0.015 |
| 400 | 8 | 66.0 | 5,600 | 1,950 | 3.25 | 2.44 | 1.39 | 0.70 | 4 | 0.8 | 12 | 8 | 0.004 | 0.020 |
| 500 | 8 | 72.0 | 7,000 | 2,210 | 3.68 | 2.76 | 1.58 | 0.79 | 5 | 1.0 | 15 | 10 | 0.005 | 0.025 |
| 600 | 8 | 75.0 | 8,400 | 2,600 | 4.33 | 3.25 | 1.86 | 0.93 | 6 | 1.2 | 18 | 12 | 0.006 | 0.030 |
| 700 | 8 | 81.0 | 9,800 | 2,860 | 4.77 | 3.58 | 2.04 | 1.02 | 7 | 1.4 | 21 | 14 | 0.007 | 0.035 |
| 800 | 8 | 84.0 | 11,200 | 3,120 | 5.20 | 3.90 | 2.23 | 1.11 | 8 | 1.6 | 24 | 16 | 0.008 | 0.040 |
| 900 | 8 | 87.0 | 12,600 | 3,380 | 5.63 | 4.23 | 2.41 | 1.21 | 9 | 1.8 | 27 | 18 | 0.009 | 0.045 |
| 1,000 | 9 | 90.0 | 14,000 | 3,640 | 6.07 | 4.55 | 2.60 | 1.30 | 10 | 2.0 | 30 | 20 | 0.010 | 0.050 |
| 2,000 | 9 | 108.0 | 28,000 | 5,590 | 9.32 | 6.99 | 3.99 | 2.00 | 20 | 4.0 | 60 | 40 | 0.020 | 0.100 |
| 3,000 | 9 | 126.0 | 42,000 | 7,410 | 12.35 | 9.26 | 5.29 | 2.65 | 30 | 6.0 | 90 | 60 | 0.030 | 0.150 |
| 4,000 | 9 | 141.0 | 56,000 | 9,100 | 15.17 | 11.38 | 6.50 | 3.25 | 40 | 8.0 | 120 | 80 | 0.040 | 0.200 |
| 5,000 | 9 | 153.0 | 70,000 | 10,400 | 17.33 | 13.00 | 7.43 | 3.71 | 50 | 10.0 | 150 | 100 | 0.050 | 0.250 |

## Wedge Hull

Price Modifiers: No SL 0.5; SL 0.7; AF 1.5

| Size ($T_d$) | Size Code | Length (m) | Total Volume ($m^3$) | Surface Area ($m^2$) | Volume Factor TL 8-9 | TL 10-11 | TL 12-13 | TL 14-16 | Airlocks Qty | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 7 | 17.5 | 140 | 285 | 0.48 | 0.36 | 0.20 | 0.10 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 20 | 7 | 20.0 | 280 | 345 | 0.58 | 0.43 | 0.25 | 0.12 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 30 | 7 | 23.0 | 420 | 405 | 0.68 | 0.51 | 0.29 | 0.14 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 40 | 7 | 26.0 | 560 | 465 | 0.78 | 0.58 | 0.33 | 0.17 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 50 | 7 | 28.0 | 700 | 570 | 0.95 | 0.71 | 0.41 | 0.20 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 60 | 7 | 29.0 | 840 | 630 | 1.05 | 0.79 | 0.45 | 0.23 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 70 | 7 | 31.3 | 980 | 690 | 1.15 | 0.86 | 0.49 | 0.25 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 80 | 7 | 33.0 | 1,120 | 765 | 1.28 | 0.96 | 0.55 | 0.27 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 90 | 7 | 34.0 | 1,260 | 825 | 1.38 | 1.03 | 0.59 | 0.29 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 100 | 8 | 35.0 | 1,400 | 900 | 1.50 | 1.13 | 0.64 | 0.32 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 200 | 8 | 42.5 | 2,800 | 1,350 | 2.25 | 1.69 | 0.96 | 0.48 | 2 | 0.4 | 6 | 4 | 0.002 | 0.010 |
| 300 | 8 | 50.0 | 4,200 | 1,800 | 3.00 | 2.25 | 1.29 | 0.64 | 3 | 0.6 | 9 | 6 | 0.003 | 0.015 |
| 400 | 8 | 55.0 | 5,600 | 2,250 | 3.75 | 2.81 | 1.61 | 0.80 | 4 | 0.8 | 12 | 8 | 0.004 | 0.020 |
| 500 | 8 | 60.0 | 7,000 | 2,550 | 4.25 | 3.19 | 1.82 | 0.91 | 5 | 1.0 | 15 | 10 | 0.005 | 0.025 |
| 600 | 8 | 62.5 | 8,400 | 3,000 | 5.00 | 3.75 | 2.14 | 1.07 | 6 | 1.2 | 18 | 12 | 0.006 | 0.030 |
| 700 | 8 | 67.5 | 9,800 | 3,300 | 5.50 | 4.13 | 2.36 | 1.18 | 7 | 1.4 | 21 | 14 | 0.007 | 0.035 |
| 800 | 8 | 70.0 | 11,200 | 3,600 | 6.00 | 4.50 | 2.57 | 1.29 | 8 | 1.6 | 24 | 16 | 0.008 | 0.040 |
| 900 | 8 | 72.5 | 12,600 | 3,900 | 6.50 | 4.88 | 2.79 | 1.39 | 9 | 1.8 | 27 | 18 | 0.009 | 0.045 |
| 1,000 | 9 | 75.0 | 14,000 | 4,200 | 7.00 | 5.25 | 3.00 | 1.50 | 10 | 2.0 | 30 | 20 | 0.010 | 0.050 |
| 2,000 | 9 | 90.0 | 28,000 | 6,450 | 10.75 | 8.06 | 4.61 | 2.30 | 20 | 4.0 | 60 | 40 | 0.020 | 0.100 |
| 3,000 | 9 | 105.0 | 42,000 | 8,550 | 14.25 | 10.69 | 6.11 | 3.05 | 30 | 6.0 | 90 | 60 | 0.030 | 0.150 |
| 4,000 | 9 | 117.5 | 56,000 | 10,500 | 17.50 | 13.13 | 7.50 | 3.75 | 40 | 8.0 | 120 | 80 | 0.040 | 0.200 |
| 5,000 | 9 | 127.5 | 70,000 | 12,000 | 20.00 | 15.00 | 8.57 | 4.29 | 50 | 10.0 | 150 | 100 | 0.050 | 0.250 |

## Cylinder Hull

Price Modifiers: No SL 0.6; SL 0.8; AF 2.0

| Size ($T_d$) | Size Code | Length (m) | Total Volume ($m^3$) | Surface Area ($m^2$) | Volume Factor TL 8-9 | TL 10-11 | TL 12-13 | TL 14-16 | Airlocks Qty | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 7 | 14.0 | 140 | 209 | 0.35 | 0.26 | 0.15 | 0.07 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 20 | 7 | 16.0 | 280 | 253 | 0.42 | 0.32 | 0.18 | 0.09 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 30 | 7 | 18.4 | 420 | 297 | 0.50 | 0.37 | 0.21 | 0.11 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 40 | 7 | 20.8 | 560 | 341 | 0.57 | 0.43 | 0.24 | 0.12 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 50 | 7 | 22.4 | 700 | 418 | 0.70 | 0.52 | 0.30 | 0.15 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 60 | 7 | 23.2 | 840 | 462 | 0.77 | 0.58 | 0.33 | 0.17 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 70 | 7 | 25.0 | 980 | 506 | 0.84 | 0.63 | 0.36 | 0.18 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 80 | 7 | 26.4 | 1,120 | 561 | 0.94 | 0.70 | 0.40 | 0.20 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 90 | 7 | 27.2 | 1,260 | 605 | 1.01 | 0.76 | 0.43 | 0.22 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 100 | 8 | 28.0 | 1,400 | 660 | 1.10 | 0.83 | 0.47 | 0.24 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 200 | 8 | 34.0 | 2,800 | 990 | 1.65 | 1.24 | 0.71 | 0.35 | 2 | 0.4 | 6 | 4 | 0.002 | 0.010 |
| 300 | 8 | 40.0 | 4,200 | 1,320 | 2.20 | 1.65 | 0.94 | 0.47 | 3 | 0.6 | 9 | 6 | 0.003 | 0.015 |
| 400 | 8 | 44.0 | 5,600 | 1,650 | 2.75 | 2.06 | 1.18 | 0.59 | 4 | 0.8 | 12 | 8 | 0.004 | 0.020 |
| 500 | 8 | 48.0 | 7,000 | 1,870 | 3.12 | 2.34 | 1.34 | 0.67 | 5 | 1.0 | 15 | 10 | 0.005 | 0.025 |
| 600 | 8 | 50.0 | 8,400 | 2,200 | 3.67 | 2.75 | 1.57 | 0.79 | 6 | 1.2 | 18 | 12 | 0.006 | 0.030 |
| 700 | 8 | 54.0 | 9,800 | 2,420 | 4.03 | 3.03 | 1.73 | 0.86 | 7 | 1.4 | 21 | 14 | 0.007 | 0.035 |
| 800 | 8 | 56.0 | 11,200 | 2,640 | 4.40 | 3.30 | 1.89 | 0.94 | 8 | 1.6 | 24 | 16 | 0.008 | 0.040 |
| 900 | 8 | 58.0 | 12,600 | 2,860 | 4.77 | 3.58 | 2.04 | 1.02 | 9 | 1.8 | 27 | 18 | 0.009 | 0.045 |
| 1,000 | 9 | 60.0 | 14,000 | 3,080 | 5.13 | 3.85 | 2.20 | 1.10 | 10 | 2.0 | 30 | 20 | 0.010 | 0.050 |
| 2,000 | 9 | 72.0 | 28,000 | 4,730 | 7.88 | 5.91 | 3.38 | 1.69 | 20 | 4.0 | 60 | 40 | 0.020 | 0.100 |
| 3,000 | 9 | 84.0 | 42,000 | 6,270 | 10.45 | 7.84 | 4.48 | 2.24 | 30 | 6.0 | 90 | 60 | 0.030 | 0.150 |
| 4,000 | 9 | 94.0 | 56,000 | 7,700 | 12.83 | 9.63 | 5.50 | 2.75 | 40 | 8.0 | 120 | 80 | 0.040 | 0.200 |
| 5,000 | 9 | 102.0 | 70,000 | 8,800 | 14.67 | 11.00 | 6.29 | 3.14 | 50 | 10.0 | 150 | 100 | 0.050 | 0.250 |

## Box Hull

Price Modifiers: No SL 0.4; SL 0.6; AF n/a

| Size ($T_d$) | Size Code | Length (m) | Total Volume ($m^3$) | Surface Area ($m^2$) | Volume Factor TL 8-9 | TL 10-11 | TL 12-13 | TL 14-16 | Airlocks Qty | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 7 | 8.8 | 140 | 228 | 0.38 | 0.29 | 0.16 | 0.08 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 20 | 7 | 10.0 | 280 | 276 | 0.46 | 0.35 | 0.20 | 0.10 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 30 | 7 | 11.5 | 420 | 324 | 0.54 | 0.41 | 0.23 | 0.12 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 40 | 7 | 13.0 | 560 | 372 | 0.62 | 0.47 | 0.27 | 0.13 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 50 | 7 | 14.0 | 700 | 456 | 0.76 | 0.57 | 0.33 | 0.16 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 60 | 7 | 14.5 | 840 | 504 | 0.84 | 0.63 | 0.36 | 0.18 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 70 | 7 | 15.6 | 980 | 552 | 0.92 | 0.69 | 0.39 | 0.20 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 80 | 7 | 16.5 | 1,120 | 612 | 1.02 | 0.77 | 0.44 | 0.22 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 90 | 7 | 17.0 | 1,260 | 660 | 1.10 | 0.83 | 0.47 | 0.24 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 100 | 8 | 17.5 | 1,400 | 720 | 1.20 | 0.90 | 0.51 | 0.26 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 200 | 8 | 21.3 | 2,800 | 1,080 | 1.80 | 1.35 | 0.77 | 0.39 | 2 | 0.4 | 6 | 4 | 0.002 | 0.010 |
| 300 | 8 | 25.0 | 4,200 | 1,440 | 2.40 | 1.80 | 1.03 | 0.51 | 3 | 0.6 | 9 | 6 | 0.003 | 0.015 |
| 400 | 8 | 27.5 | 5,600 | 1,800 | 3.00 | 2.25 | 1.29 | 0.64 | 4 | 0.8 | 12 | 8 | 0.004 | 0.020 |
| 500 | 8 | 30.0 | 7,000 | 2,040 | 3.40 | 2.55 | 1.46 | 0.73 | 5 | 1.0 | 15 | 10 | 0.005 | 0.025 |
| 600 | 8 | 31.3 | 8,400 | 2,400 | 4.00 | 3.00 | 1.71 | 0.86 | 6 | 1.2 | 18 | 12 | 0.006 | 0.030 |
| 700 | 8 | 33.8 | 9,800 | 2,640 | 4.40 | 3.30 | 1.89 | 0.94 | 7 | 1.4 | 21 | 14 | 0.007 | 0.035 |
| 800 | 8 | 35.0 | 11,200 | 2,880 | 4.80 | 3.60 | 2.06 | 1.03 | 8 | 1.6 | 24 | 16 | 0.008 | 0.040 |
| 900 | 8 | 36.3 | 12,600 | 3,120 | 5.20 | 3.90 | 2.23 | 1.11 | 9 | 1.8 | 27 | 18 | 0.009 | 0.045 |
| 1,000 | 9 | 37.5 | 14,000 | 3,360 | 5.60 | 4.20 | 2.40 | 1.20 | 10 | 2.0 | 30 | 20 | 0.010 | 0.050 |
| 2,000 | 9 | 45.0 | 28,000 | 5,160 | 8.60 | 6.45 | 3.69 | 1.84 | 20 | 4.0 | 60 | 40 | 0.020 | 0.100 |
| 3,000 | 9 | 52.5 | 42,000 | 6,840 | 11.40 | 8.55 | 4.89 | 2.44 | 30 | 6.0 | 90 | 60 | 0.030 | 0.150 |
| 4,000 | 9 | 58.8 | 56,000 | 8,400 | 14.00 | 10.50 | 6.00 | 3.00 | 40 | 8.0 | 120 | 80 | 0.040 | 0.200 |
| 5,000 | 9 | 63.8 | 70,000 | 9,600 | 16.00 | 12.00 | 6.86 | 3.43 | 50 | 10.0 | 150 | 100 | 0.050 | 0.250 |

## Sphere Hull

Price Modifiers: No SL 0.8; SL 1.0; AF n/a

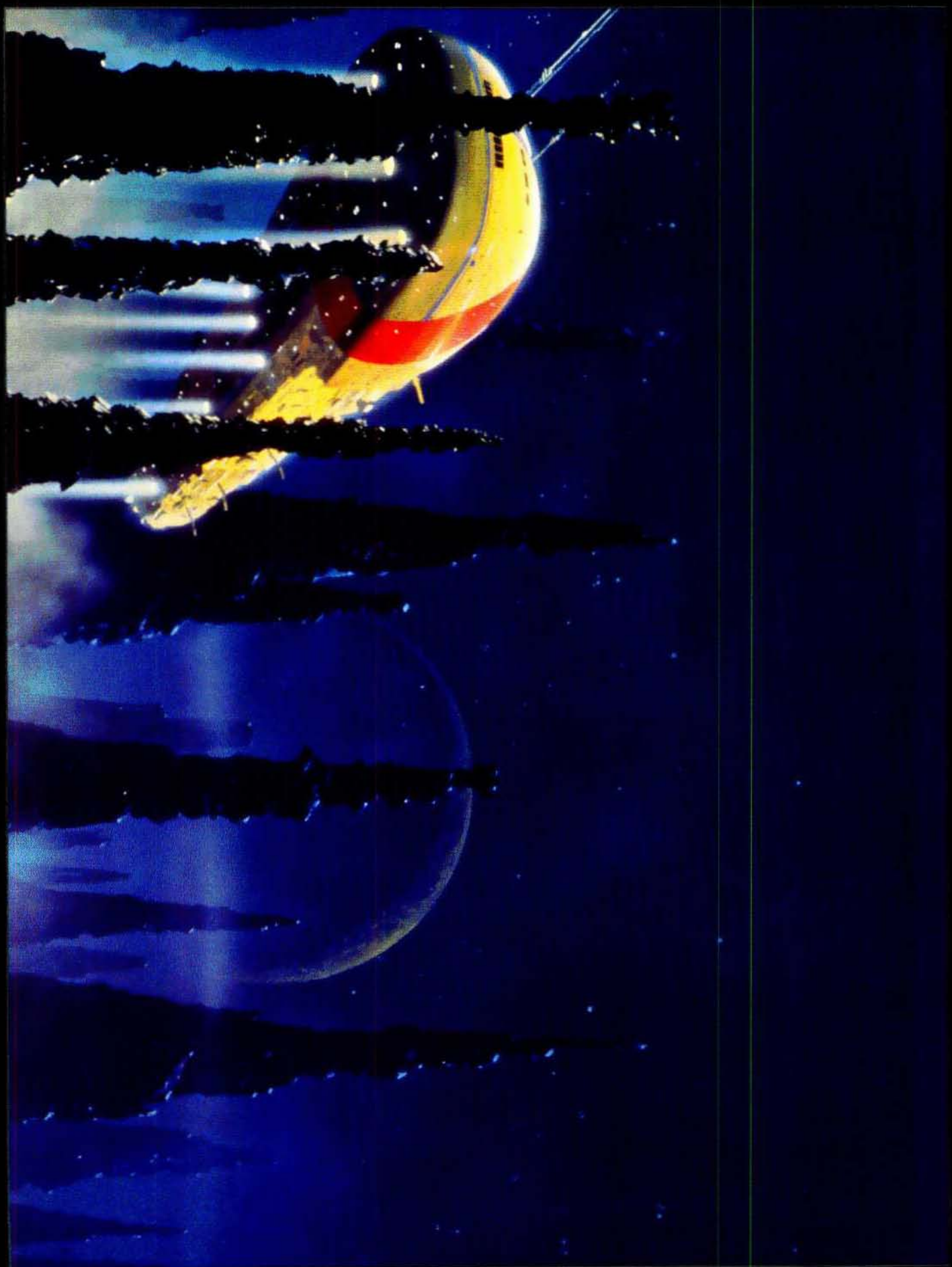
| Size ($T_d$) | Size Code | Length (m) | Total Volume ($m^3$) | Surface Area ($m^2$) | Volume Factor TL 8-9 | TL 10-11 | TL 12-13 | TL 14-16 | Airlocks Qty | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 7 | 7.0 | 140 | 190 | 0.32 | 0.24 | 0.14 | 0.07 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 20 | 7 | 8.0 | 280 | 230 | 0.38 | 0.29 | 0.16 | 0.08 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 30 | 7 | 9.2 | 420 | 270 | 0.45 | 0.34 | 0.19 | 0.10 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 40 | 7 | 10.4 | 560 | 310 | 0.52 | 0.39 | 0.22 | 0.11 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 50 | 7 | 11.2 | 700 | 380 | 0.63 | 0.48 | 0.27 | 0.14 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 60 | 7 | 11.6 | 840 | 420 | 0.70 | 0.53 | 0.30 | 0.15 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 70 | 7 | 12.5 | 980 | 460 | 0.77 | 0.58 | 0.33 | 0.16 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 80 | 7 | 13.2 | 1,120 | 510 | 0.85 | 0.64 | 0.36 | 0.18 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 90 | 7 | 13.6 | 1,260 | 550 | 0.92 | 0.69 | 0.39 | 0.20 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 100 | 8 | 14.0 | 1,400 | 600 | 1.00 | 0.75 | 0.43 | 0.21 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 200 | 8 | 17.0 | 2,800 | 900 | 1.50 | 1.13 | 0.64 | 0.32 | 2 | 0.4 | 6 | 4 | 0.002 | 0.010 |
| 300 | 8 | 20.0 | 4,200 | 1,200 | 2.00 | 1.50 | 0.86 | 0.43 | 3 | 0.6 | 9 | 6 | 0.003 | 0.015 |
| 400 | 8 | 22.0 | 5,600 | 1,500 | 2.50 | 1.88 | 1.07 | 0.54 | 4 | 0.8 | 12 | 8 | 0.004 | 0.020 |
| 500 | 8 | 24.0 | 7,000 | 1,700 | 2.83 | 2.13 | 1.21 | 0.61 | 5 | 1.0 | 15 | 10 | 0.005 | 0.025 |
| 600 | 8 | 25.0 | 8,400 | 2,000 | 3.33 | 2.50 | 1.43 | 0.71 | 6 | 1.2 | 18 | 12 | 0.006 | 0.030 |
| 700 | 8 | 27.0 | 9,800 | 2,200 | 3.67 | 2.75 | 1.57 | 0.79 | 7 | 1.4 | 21 | 14 | 0.007 | 0.035 |
| 800 | 8 | 28.0 | 11,200 | 2,400 | 4.00 | 3.00 | 1.71 | 0.86 | 8 | 1.6 | 24 | 16 | 0.008 | 0.040 |
| 900 | 8 | 29.0 | 12,600 | 2,600 | 4.33 | 3.25 | 1.86 | 0.93 | 9 | 1.8 | 27 | 18 | 0.009 | 0.045 |
| 1,000 | 9 | 30.0 | 14,000 | 2,800 | 4.67 | 3.50 | 2.00 | 1.00 | 10 | 2.0 | 30 | 20 | 0.010 | 0.050 |
| 2,000 | 9 | 36.0 | 28,000 | 4,300 | 7.17 | 5.38 | 3.07 | 1.54 | 20 | 4.0 | 60 | 40 | 0.020 | 0.100 |
| 3,000 | 9 | 42.0 | 42,000 | 5,700 | 9.50 | 7.13 | 4.07 | 2.04 | 30 | 6.0 | 90 | 60 | 0.030 | 0.150 |
| 4,000 | 9 | 47.0 | 56,000 | 7,000 | 11.67 | 8.75 | 5.00 | 2.50 | 40 | 8.0 | 120 | 80 | 0.040 | 0.200 |
| 5,000 | 9 | 51.0 | 70,000 | 8,000 | 13.33 | 10.00 | 5.71 | 2.86 | 50 | 10.0 | 150 | 100 | 0.050 | 0.250 |

## Dome/Disc Hull

Price Modifiers: No SL 1.4; SL 1.6; AF 1.2

| Size ($T_d$) | Size Code | Length (m) | Total Volume ($m^3$) | Surface Area ($m^2$) | Volume Factor TL 8-9 | TL 10-11 | TL 12-13 | TL 14-16 | Airlocks Qty | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 7 | 10.5 | 140 | 228 | 0.38 | 0.29 | 0.16 | 0.08 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 20 | 7 | 12.0 | 280 | 276 | 0.46 | 0.35 | 0.20 | 0.10 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 30 | 7 | 13.8 | 420 | 324 | 0.54 | 0.41 | 0.23 | 0.12 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 40 | 7 | 15.6 | 560 | 372 | 0.62 | 0.47 | 0.27 | 0.13 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 50 | 7 | 16.8 | 700 | 456 | 0.76 | 0.57 | 0.33 | 0.16 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 60 | 7 | 17.4 | 840 | 504 | 0.84 | 0.63 | 0.36 | 0.18 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 70 | 7 | 18.8 | 980 | 552 | 0.92 | 0.69 | 0.39 | 0.20 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 80 | 7 | 19.8 | 1,120 | 612 | 1.02 | 0.77 | 0.44 | 0.22 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 90 | 7 | 20.4 | 1,260 | 660 | 1.10 | 0.83 | 0.47 | 0.24 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 100 | 8 | 21.0 | 1,400 | 720 | 1.20 | 0.90 | 0.51 | 0.26 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 200 | 8 | 25.5 | 2,800 | 1,080 | 1.80 | 1.35 | 0.77 | 0.39 | 2 | 0.4 | 6 | 4 | 0.002 | 0.010 |
| 300 | 8 | 30.0 | 4,200 | 1,440 | 2.40 | 1.80 | 1.03 | 0.51 | 3 | 0.6 | 9 | 6 | 0.003 | 0.015 |
| 400 | 8 | 33.0 | 5,600 | 1,800 | 3.00 | 2.25 | 1.29 | 0.64 | 4 | 0.8 | 12 | 8 | 0.004 | 0.020 |
| 500 | 8 | 36.0 | 7,000 | 2,040 | 3.40 | 2.55 | 1.46 | 0.73 | 5 | 1.0 | 15 | 10 | 0.005 | 0.025 |
| 600 | 8 | 37.5 | 8,400 | 2,400 | 4.00 | 3.00 | 1.71 | 0.86 | 6 | 1.2 | 18 | 12 | 0.006 | 0.030 |
| 700 | 8 | 40.5 | 9,800 | 2,640 | 4.40 | 3.30 | 1.89 | 0.94 | 7 | 1.4 | 21 | 14 | 0.007 | 0.035 |
| 800 | 8 | 42.0 | 11,200 | 2,880 | 4.80 | 3.60 | 2.06 | 1.03 | 8 | 1.6 | 24 | 16 | 0.008 | 0.040 |
| 900 | 8 | 43.5 | 12,600 | 3,120 | 5.20 | 3.90 | 2.23 | 1.11 | 9 | 1.8 | 27 | 18 | 0.009 | 0.045 |
| 1,000 | 9 | 45.0 | 14,000 | 3,360 | 5.60 | 4.20 | 2.40 | 1.20 | 10 | 2.0 | 30 | 20 | 0.010 | 0.050 |
| 2,000 | 9 | 54.0 | 28,000 | 5,160 | 8.60 | 6.45 | 3.69 | 1.84 | 20 | 4.0 | 60 | 40 | 0.020 | 0.100 |
| 3,000 | 9 | 63.0 | 42,000 | 6,840 | 11.40 | 8.55 | 4.89 | 2.44 | 30 | 6.0 | 90 | 60 | 0.030 | 0.150 |
| 4,000 | 9 | 70.5 | 56,000 | 8,400 | 14.00 | 10.50 | 6.00 | 3.00 | 40 | 8.0 | 120 | 80 | 0.040 | 0.200 |
| 5,000 | 9 | 76.5 | 70,000 | 9,600 | 16.00 | 12.00 | 6.86 | 3.43 | 50 | 10.0 | 150 | 100 | 0.050 | 0.250 |


10



## Close Structure Hull

Price Modifiers: No SL 0.3; SL n/a; AF n/a

| Size ($T_d$) | Size Code | Length (m) | Total Volume ($m^3$) | Surface Area ($m^2$) | Volume Factor TL 8-9 | TL 10-11 | TL 12-13 | TL 14-16 | Airlocks Qty | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 7 | 12.3 | 140 | 266 | 0.44 | 0.33 | 0.19 | 0.10 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 20 | 7 | 14.0 | 280 | 322 | 0.54 | 0.40 | 0.23 | 0.12 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 30 | 7 | 16.1 | 420 | 378 | 0.63 | 0.47 | 0.27 | 0.14 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 40 | 7 | 18.2 | 560 | 434 | 0.72 | 0.54 | 0.31 | 0.16 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 50 | 7 | 19.6 | 700 | 532 | 0.89 | 0.67 | 0.38 | 0.19 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 60 | 7 | 20.3 | 840 | 588 | 0.98 | 0.74 | 0.42 | 0.21 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 70 | 7 | 21.9 | 980 | 644 | 1.07 | 0.81 | 0.46 | 0.23 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 80 | 7 | 23.1 | 1,120 | 714 | 1.19 | 0.89 | 0.51 | 0.26 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 90 | 7 | 23.8 | 1,260 | 770 | 1.28 | 0.96 | 0.55 | 0.28 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 100 | 8 | 24.5 | 1,400 | 840 | 1.40 | 1.05 | 0.60 | 0.30 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 200 | 8 | 29.8 | 2,800 | 1,260 | 2.10 | 1.58 | 0.90 | 0.45 | 2 | 0.4 | 6 | 4 | 0.002 | 0.010 |
| 300 | 8 | 35.0 | 4,200 | 1,680 | 2.80 | 2.10 | 1.20 | 0.60 | 3 | 0.6 | 9 | 6 | 0.003 | 0.015 |
| 400 | 8 | 38.5 | 5,600 | 2,100 | 3.50 | 2.63 | 1.50 | 0.75 | 4 | 0.8 | 12 | 8 | 0.004 | 0.020 |
| 500 | 8 | 42.0 | 7,000 | 2,380 | 3.97 | 2.98 | 1.70 | 0.85 | 5 | 1.0 | 15 | 10 | 0.005 | 0.025 |
| 600 | 8 | 43.8 | 8,400 | 2,800 | 4.67 | 3.50 | 2.00 | 1.00 | 6 | 1.2 | 18 | 12 | 0.006 | 0.030 |
| 700 | 8 | 47.3 | 9,800 | 3,080 | 5.13 | 3.85 | 2.20 | 1.10 | 7 | 1.4 | 21 | 14 | 0.007 | 0.035 |
| 800 | 8 | 49.0 | 11,200 | 3,360 | 5.60 | 4.20 | 2.40 | 1.20 | 8 | 1.6 | 24 | 16 | 0.008 | 0.040 |
| 900 | 8 | 50.8 | 12,600 | 3,640 | 6.07 | 4.55 | 2.60 | 1.30 | 9 | 1.8 | 27 | 18 | 0.009 | 0.045 |
| 1,000 | 9 | 52.5 | 14,000 | 3,920 | 6.53 | 4.90 | 2.80 | 1.40 | 10 | 2.0 | 30 | 20 | 0.010 | 0.050 |
| 2,000 | 9 | 63.0 | 28,000 | 6,020 | 10.03 | 7.53 | 4.30 | 2.15 | 20 | 4.0 | 60 | 40 | 0.020 | 0.100 |
| 3,000 | 9 | 73.5 | 42,000 | 7,980 | 13.30 | 9.98 | 5.70 | 2.85 | 30 | 6.0 | 90 | 60 | 0.030 | 0.150 |
| 4,000 | 9 | 82.3 | 56,000 | 9,800 | 16.33 | 12.25 | 7.00 | 3.50 | 40 | 8.0 | 120 | 80 | 0.040 | 0.200 |
| 5,000 | 9 | 89.3 | 70,000 | 11,200 | 18.67 | 14.00 | 8.00 | 4.00 | 50 | 10.0 | 150 | 100 | 0.050 | 0.250 |

## Slab Hull

Price Modifiers: No SL 0.5; SL 0.7; AF 1.5

| Size ($T_d$) | Size Code | Length (m) | Total Volume ($m^3$) | Surface Area ($m^2$) | Volume Factor TL 8-9 | TL 10-11 | TL 12-13 | TL 14-16 | Airlocks Qty | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 7 | 19.3 | 140 | 285 | 0.48 | 0.36 | 0.20 | 0.10 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 20 | 7 | 22.0 | 280 | 345 | 0.58 | 0.43 | 0.25 | 0.12 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 30 | 7 | 25.3 | 420 | 405 | 0.68 | 0.51 | 0.29 | 0.14 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 40 | 7 | 28.6 | 560 | 465 | 0.78 | 0.58 | 0.33 | 0.17 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 50 | 7 | 30.8 | 700 | 570 | 0.95 | 0.71 | 0.41 | 0.20 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 60 | 7 | 31.9 | 840 | 630 | 1.05 | 0.79 | 0.45 | 0.23 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 70 | 7 | 34.4 | 980 | 690 | 1.15 | 0.86 | 0.49 | 0.25 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 80 | 7 | 36.3 | 1,120 | 765 | 1.28 | 0.96 | 0.55 | 0.27 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 90 | 7 | 37.4 | 1,260 | 825 | 1.38 | 1.03 | 0.59 | 0.29 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 100 | 8 | 38.5 | 1,400 | 900 | 1.50 | 1.13 | 0.64 | 0.32 | 1 | 0.2 | 3 | 2 | 0.001 | 0.005 |
| 200 | 8 | 46.8 | 2,800 | 1,350 | 2.25 | 1.69 | 0.96 | 0.48 | 2 | 0.4 | 6 | 4 | 0.002 | 0.010 |
| 300 | 8 | 55.0 | 4,200 | 1,800 | 3.00 | 2.25 | 1.29 | 0.64 | 3 | 0.6 | 9 | 6 | 0.003 | 0.015 |
| 400 | 8 | 60.5 | 5,600 | 2,250 | 3.75 | 2.81 | 1.61 | 0.80 | 4 | 0.8 | 12 | 8 | 0.004 | 0.020 |
| 500 | 8 | 66.0 | 7,000 | 2,550 | 4.25 | 3.19 | 1.82 | 0.91 | 5 | 1.0 | 15 | 10 | 0.005 | 0.025 |
| 600 | 8 | 68.8 | 8,400 | 3,000 | 5.00 | 3.75 | 2.14 | 1.07 | 6 | 1.2 | 18 | 12 | 0.006 | 0.030 |
| 700 | 8 | 74.3 | 9,800 | 3,300 | 5.50 | 4.13 | 2.36 | 1.18 | 7 | 1.4 | 21 | 14 | 0.007 | 0.035 |
| 800 | 8 | 77.0 | 11,200 | 3,600 | 6.00 | 4.50 | 2.57 | 1.29 | 8 | 1.6 | 24 | 16 | 0.008 | 0.040 |
| 900 | 8 | 79.8 | 12,600 | 3,900 | 6.50 | 4.88 | 2.79 | 1.39 | 9 | 1.8 | 27 | 18 | 0.009 | 0.045 |
| 1,000 | 9 | 82.5 | 14,000 | 4,200 | 7.00 | 5.25 | 3.00 | 1.50 | 10 | 2.0 | 30 | 20 | 0.010 | 0.050 |
| 2,000 | 9 | 99.0 | 28,000 | 6,450 | 10.75 | 8.06 | 4.61 | 2.30 | 20 | 4.0 | 60 | 40 | 0.020 | 0.100 |
| 3,000 | 9 | 115.5 | 42,000 | 8,550 | 14.25 | 10.69 | 6.11 | 3.05 | 30 | 6.0 | 90 | 60 | 0.030 | 0.150 |
| 4,000 | 9 | 129.3 | 56,000 | 10,500 | 17.50 | 13.13 | 7.50 | 3.75 | 40 | 8.0 | 120 | 80 | 0.040 | 0.200 |
| 5,000 | 9 | 140.3 | 70,000 | 12,000 | 20.00 | 15.00 | 8.57 | 4.29 | 50 | 10.0 | 150 | 100 | 0.050 | 0.250 |

## JUMP DRIVES

| | 1 Parsec (TL9) | | | | | 2 Parsecs (TL11) | | | | | 3 Parsecs (TL12) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ship Size | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Price (MCr) | Crew (Mx) | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Price (MCr) | Crew (Mx) | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Price (MCr) | Crew (Mx) | Fuel ($m^3$/psc) |
| 100 | 84 | 28 | 9 | 8.4 | 0.17 | 126 | 42 | 14 | 12.6 | 0.26 | 168 | 56 | 19 | 16.8 | 0.34 | 140 |
| 200 | 168 | 56 | 19 | 16.8 | 0.34 | 252 | 84 | 28 | 25.2 | 0.51 | 336 | 112 | 37 | 33.6 | 0.68 | 280 |
| 300 | 252 | 84 | 28 | 25.2 | 0.51 | 378 | 126 | 42 | 37.8 | 0.76 | 504 | 168 | 56 | 50.4 | 1.01 | 420 |
| 400 | 336 | 112 | 37 | 33.6 | 0.68 | 504 | 168 | 56 | 50.4 | 1.01 | 672 | 224 | 75 | 67.2 | 1.35 | 560 |
| 500 | 420 | 140 | 47 | 42.0 | 0.84 | 630 | 210 | 70 | 63.0 | 1.26 | 840 | 280 | 93 | 84.0 | 1.68 | 700 |
| 600 | 504 | 168 | 56 | 50.4 | 1.01 | 756 | 252 | 84 | 75.6 | 1.52 | 1,008 | 336 | 112 | 100.8 | 2.02 | 840 |
| 700 | 588 | 196 | 65 | 58.8 | 1.18 | 882 | 294 | 98 | 88.2 | 1.77 | 1,176 | 392 | 131 | 117.6 | 2.36 | 980 |
| 800 | 672 | 224 | 75 | 67.2 | 1.35 | 1,008 | 336 | 112 | 100.8 | 2.02 | 1,344 | 448 | 149 | 134.4 | 2.69 | 1,120 |
| 900 | 756 | 252 | 84 | 75.6 | 1.52 | 1,134 | 378 | 126 | 113.4 | 2.27 | 1,512 | 504 | 168 | 151.2 | 3.03 | 1,260 |
| 1,000 | 840 | 280 | 93 | 84.0 | 1.68 | 1,260 | 420 | 140 | 126.0 | 2.52 | 1,680 | 560 | 187 | 168.0 | 3.36 | 1,400 |
| 2,000 | 1,680 | 560 | 187 | 168.0 | 3.36 | 2,520 | 840 | 280 | 252.0 | 5.04 | 3,360 | 1,120 | 373 | 336.0 | 6.72 | 2,800 |
| 3,000 | 2,520 | 840 | 280 | 252.0 | 5.04 | 3,780 | 1,260 | 420 | 378.0 | 7.56 | 5,040 | 1,680 | 560 | 504.0 | 10.08 | 4,200 |
| 4,000 | 3,360 | 1,120 | 373 | 336.0 | 6.72 | 5,040 | 1,680 | 560 | 504.0 | 10.08 | 6,720 | 2,240 | 747 | 672.0 | 13.44 | 5,600 |
| 5,000 | 4,200 | 1,400 | 467 | 420.0 | 8.40 | 6,300 | 2,100 | 700 | 630.0 | 12.60 | 8,400 | 2,800 | 933 | 840.0 | 16.80 | 7,000 |

| | 4 Parsecs (TL13) | | | | | 5 Parsecs (TL14) | | | | | 6 Parsecs (TL15) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ship Size | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Price (MCr) | Crew (Mx) | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Price (MCr) | Crew (Mx) | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Price (MCr) | Crew (Mx) | Fuel ($m^3$/psc) |
| 100 | 210 | 70 | 23 | 21.0 | 0.42 | 210 | 84 | 28 | 25.2 | 0.42 | 196 | 98 | 33 | 29.4 | 0.40 | 140 |
| 200 | 420 | 140 | 47 | 42.0 | 0.84 | 420 | 168 | 56 | 50.4 | 0.84 | 392 | 196 | 65 | 58.8 | 0.79 | 280 |
| 300 | 630 | 210 | 70 | 63.0 | 1.26 | 630 | 252 | 84 | 75.6 | 1.26 | 588 | 294 | 98 | 88.2 | 1.18 | 420 |
| 400 | 840 | 280 | 93 | 84.0 | 1.68 | 840 | 336 | 112 | 100.8 | 1.68 | 784 | 392 | 131 | 117.6 | 1.57 | 560 |
| 500 | 1,050 | 350 | 117 | 105.0 | 2.10 | 1,050 | 420 | 140 | 126.0 | 2.10 | 980 | 490 | 163 | 147.0 | 1.96 | 700 |
| 600 | 1,260 | 420 | 140 | 126.0 | 2.52 | 1,260 | 504 | 168 | 151.2 | 2.52 | 1,176 | 588 | 196 | 176.4 | 2.36 | 840 |
| 700 | 1,470 | 490 | 163 | 147.0 | 2.94 | 1,470 | 588 | 196 | 176.4 | 2.94 | 1,372 | 686 | 229 | 205.8 | 2.75 | 980 |
| 800 | 1,680 | 560 | 187 | 168.0 | 3.36 | 1,680 | 672 | 224 | 201.6 | 3.36 | 1,568 | 784 | 261 | 235.2 | 3.14 | 1,120 |
| 900 | 1,890 | 630 | 210 | 189.0 | 3.78 | 1,890 | 756 | 252 | 226.8 | 3.78 | 1,764 | 882 | 294 | 264.6 | 3.53 | 1,260 |
| 1,000 | 2,100 | 700 | 233 | 210.0 | 4.20 | 2,100 | 840 | 280 | 252.0 | 4.20 | 1,960 | 980 | 327 | 294.0 | 3.92 | 1,400 |
| 2,000 | 4,200 | 1,400 | 467 | 420.0 | 8.40 | 4,200 | 1,680 | 560 | 504.0 | 8.40 | 3,920 | 1,960 | 653 | 588.0 | 7.84 | 2,800 |
| 3,000 | 6,300 | 2,100 | 700 | 630.0 | 12.60 | 6,300 | 2,520 | 840 | 756.0 | 12.60 | 5,880 | 2,940 | 980 | 882.0 | 11.76 | 4,200 |
| 4,000 | 8,400 | 2,800 | 933 | 840.0 | 16.80 | 8,400 | 3,360 | 1,120 | 1,008.0 | 16.80 | 7,840 | 3,920 | 1,307 | 1,176.0 | 15.68 | 5,600 |
| 5,000 | 10,500 | 3,500 | 1,167 | 1,050.0 | 21.00 | 10,500 | 4,200 | 1,400 | 1,260.0 | 21.00 | 9,800 | 4,900 | 1,633 | 1,470.0 | 19.60 | 7,000 |

## Basic ContraGravity Drives (TL 9)

| Thrust (tonnes) | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew (Mx) |
|---|---|---|---|---|---|---|
| 100 | 2.7 | 3.4 | 2 | 2.0 | 0.14 | 0.1 |
| 200 | 5.3 | 6.7 | 4 | 4.0 | 0.27 | 0.1 |
| 300 | 8.0 | 10.0 | 6 | 6.0 | 0.40 | 0.1 |
| 400 | 10.7 | 13.4 | 8 | 8.0 | 0.54 | 0.1 |
| 500 | 13.3 | 16.7 | 10 | 10.0 | 0.67 | 0.1 |
| 600 | 16.0 | 20.0 | 12 | 12.0 | 0.80 | 0.1 |
| 800 | 21.3 | 26.7 | 16 | 16.0 | 1.07 | 0.1 |
| 900 | 24.0 | 30.0 | 18 | 18.0 | 1.20 | 0.1 |
| 1,000 | 26.7 | 33.4 | 20 | 20.0 | 1.34 | 0.1 |
| 1,200 | 32.0 | 40.0 | 24 | 24.0 | 1.60 | 0.1 |
| 1,400 | 37.3 | 46.7 | 28 | 28.0 | 1.87 | 0.1 |
| 1,500 | 40.0 | 50.0 | 30 | 30.0 | 2.00 | 0.1 |
| 1,600 | 42.7 | 53.4 | 32 | 32.0 | 2.14 | 0.1 |
| 1,800 | 48.0 | 60.0 | 36 | 36.0 | 2.40 | 0.1 |
| 2,000 | 53.3 | 66.7 | 40 | 40.0 | 2.67 | 0.2 |
| 2,100 | 56.0 | 70.0 | 42 | 42.0 | 2.80 | 0.2 |
| 2,400 | 64.0 | 80.0 | 48 | 48.0 | 3.20 | 0.2 |
| 2,500 | 66.7 | 83.4 | 50 | 50.0 | 3.34 | 0.2 |
| 2,700 | 72.0 | 90.0 | 54 | 54.0 | 3.60 | 0.2 |
| 2,800 | 74.7 | 93.4 | 56 | 56.0 | 3.74 | 0.2 |
| 3,000 | 80.0 | 100.0 | 60 | 60.0 | 4.00 | 0.2 |
| 3,200 | 85.3 | 106.7 | 64 | 64.0 | 4.27 | 0.2 |
| 3,500 | 93.3 | 116.7 | 70 | 70.0 | 4.67 | 0.2 |
| 3,600 | 96.0 | 120.0 | 72 | 72.0 | 4.80 | 0.2 |
| 4,000 | 106.7 | 133.4 | 80 | 80.0 | 5.34 | 0.3 |
| 4,200 | 112.0 | 140.0 | 84 | 84.0 | 5.60 | 0.3 |
| 4,500 | 120.0 | 150.0 | 90 | 90.0 | 6.00 | 0.3 |
| 4,800 | 128.0 | 160.0 | 96 | 96.0 | 6.40 | 0.3 |
| 5,000 | 133.3 | 166.7 | 100 | 100.0 | 6.67 | 0.3 |
| 5,400 | 144.0 | 180.0 | 108 | 108.0 | 7.20 | 0.3 |
| 6,000 | 160.0 | 200.0 | 120 | 120.0 | 8.00 | 0.4 |
| 8,000 | 213.3 | 266.7 | 160 | 160.0 | 10.67 | 0.5 |
| 9,000 | 240.0 | 300.0 | 180 | 180.0 | 12.00 | 0.5 |
| 10,000 | 266.7 | 333.4 | 200 | 200.0 | 13.34 | 0.6 |
| 12,000 | 320.0 | 400.0 | 240 | 240.0 | 16.00 | 0.7 |
| 14,000 | 373.3 | 466.7 | 280 | 280.0 | 18.67 | 0.8 |
| 15,000 | 400.0 | 500.0 | 300 | 300.0 | 20.00 | 0.8 |
| 16,000 | 426.7 | 533.4 | 320 | 320.0 | 21.34 | 0.9 |
| 18,000 | 480.0 | 600.0 | 360 | 360.0 | 24.00 | 1.0 |
| 20,000 | 533.3 | 666.7 | 400 | 400.0 | 26.67 | 1.1 |
| 21,000 | 560.0 | 700.0 | 420 | 420.0 | 28.00 | 1.2 |
| 24,000 | 640.0 | 800.0 | 480 | 480.0 | 32.00 | 1.3 |
| 25,000 | 666.7 | 833.4 | 500 | 500.0 | 33.34 | 1.4 |
| 27,000 | 720.0 | 900.0 | 540 | 540.0 | 36.00 | 1.5 |
| 28,000 | 746.7 | 933.4 | 560 | 560.0 | 37.34 | 1.5 |
| 30,000 | 800.0 | 1,000.0 | 600 | 600.0 | 40.00 | 1.6 |
| 32,000 | 853.3 | 1,066.7 | 640 | 640.0 | 42.67 | 1.8 |
| 35,000 | 933.3 | 1,166.7 | 700 | 700.0 | 46.67 | 1.9 |
| 36,000 | 960.0 | 1,200.0 | 720 | 720.0 | 48.00 | 2.0 |
| 40,000 | 1,066.7 | 1,333.4 | 800 | 800.0 | 53.34 | 2.2 |
| 42,000 | 1,120.0 | 1,400.0 | 840 | 840.0 | 56.00 | 2.3 |
| 45,000 | 1,200.0 | 1,500.0 | 900 | 900.0 | 60.00 | 2.4 |
| 48,000 | 1,280.0 | 1,600.0 | 960 | 960.0 | 64.00 | 2.6 |
| 50,000 | 1,333.3 | 1,666.7 | 1,000 | 1,000.0 | 66.67 | 2.7 |
| 54,000 | 1,440.0 | 1,800.0 | 1,080 | 1,080.0 | 72.00 | 2.9 |
| 60,000 | 1,600.0 | 2,000.0 | 1,200 | 1,200.0 | 80.00 | 3.2 |
| 80,000 | 2,133.3 | 2,666.7 | 1,600 | 1,600.0 | 106.67 | 4.3 |
| 90,000 | 2,400.0 | 3,000.0 | 1,800 | 1,800.0 | 120.00 | 4.8 |
| 100,000 | 2,666.7 | 3,333.4 | 2,000 | 2,000.0 | 133.34 | 5.4 |
| 120,000 | 3,200.0 | 4,000.0 | 2,400 | 2,400.0 | 160.00 | 6.4 |
| 150,000 | 4,000.0 | 5,000.0 | 3,000 | 3,000.0 | 200.00 | 8.0 |
| 160,000 | 4,266.7 | 5,333.4 | 3,200 | 3,200.0 | 213.34 | 8.6 |
| 180,000 | 4,800.0 | 6,000.0 | 3,600 | 3,600.0 | 240.00 | 9.6 |
| 200,000 | 5,333.3 | 6,666.7 | 4,000 | 4,000.0 | 266.67 | 10.7 |
| 240,000 | 6,400.0 | 8,000.0 | 4,800 | 4,800.0 | 320.00 | 12.8 |
| 250,000 | 6,666.7 | 8,333.4 | 5,000 | 5,000.0 | 333.34 | 13.4 |
| 300,000 | 8,000.0 | 10,000.0 | 6,000 | 6,000.0 | 400.00 | 16.0 |

## Standard ContraGravity Drives (TL 10)

| Thrust (tonnes) | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew (Mx) |
|---|---|---|---|---|---|---|
| 100 | 2.0 | 2.0 | 2 | 1.4 | 0.17 | 0.1 |
| 200 | 4.0 | 4.0 | 4 | 2.7 | 0.34 | 0.1 |
| 300 | 6.0 | 6.0 | 6 | 4.0 | 0.50 | 0.1 |
| 400 | 8.0 | 8.0 | 8 | 5.4 | 0.67 | 0.1 |
| 500 | 10.0 | 10.0 | 10 | 6.7 | 0.84 | 0.1 |
| 600 | 12.0 | 12.0 | 12 | 8.0 | 1.00 | 0.1 |
| 800 | 16.0 | 16.0 | 16 | 10.7 | 1.34 | 0.1 |
| 900 | 18.0 | 18.0 | 18 | 12.0 | 1.50 | 0.1 |
| 1,000 | 20.0 | 20.0 | 20 | 13.4 | 1.67 | 0.1 |
| 1,200 | 24.0 | 24.0 | 24 | 16.0 | 2.00 | 0.1 |
| 1,400 | 28.0 | 28.0 | 28 | 18.7 | 2.34 | 0.1 |
| 1,500 | 30.0 | 30.0 | 30 | 20.0 | 2.50 | 0.1 |
| 1,600 | 32.0 | 32.0 | 32 | 21.4 | 2.67 | 0.1 |
| 1,800 | 36.0 | 36.0 | 36 | 24.0 | 3.00 | 0.1 |
| 2,000 | 40.0 | 40.0 | 40 | 26.7 | 3.34 | 0.1 |
| 2,100 | 42.0 | 42.0 | 42 | 28.0 | 3.50 | 0.1 |
| 2,400 | 48.0 | 48.0 | 48 | 32.0 | 4.00 | 0.1 |
| 2,500 | 50.0 | 50.0 | 50 | 33.4 | 4.17 | 0.1 |
| 2,700 | 54.0 | 54.0 | 54 | 36.0 | 4.50 | 0.2 |
| 2,800 | 56.0 | 56.0 | 56 | 37.4 | 4.67 | 0.2 |
| 3,000 | 60.0 | 60.0 | 60 | 40.0 | 5.00 | 0.2 |
| 3,200 | 64.0 | 64.0 | 64 | 42.7 | 5.34 | 0.2 |
| 3,500 | 70.0 | 70.0 | 70 | 46.7 | 5.84 | 0.2 |
| 3,600 | 72.0 | 72.0 | 72 | 48.0 | 6.00 | 0.2 |
| 4,000 | 80.0 | 80.0 | 80 | 53.4 | 6.67 | 0.2 |
| 4,200 | 84.0 | 84.0 | 84 | 56.0 | 7.00 | 0.2 |
| 4,500 | 90.0 | 90.0 | 90 | 60.0 | 7.50 | 0.2 |
| 4,800 | 96.0 | 96.0 | 96 | 64.0 | 8.00 | 0.2 |
| 5,000 | 100.0 | 100.0 | 100 | 66.7 | 8.34 | 0.2 |
| 5,400 | 108.0 | 108.0 | 108 | 72.0 | 9.00 | 0.3 |
| 6,000 | 120.0 | 120.0 | 120 | 80.0 | 10.00 | 0.3 |
| 8,000 | 160.0 | 160.0 | 160 | 106.7 | 13.34 | 0.4 |
| 9,000 | 180.0 | 180.0 | 180 | 120.0 | 15.00 | 0.4 |
| 10,000 | 200.0 | 200.0 | 200 | 133.4 | 16.67 | 0.4 |
| 12,000 | 240.0 | 240.0 | 240 | 160.0 | 20.00 | 0.5 |
| 14,000 | 280.0 | 280.0 | 280 | 186.7 | 23.34 | 0.6 |
| 15,000 | 300.0 | 300.0 | 300 | 200.0 | 25.00 | 0.6 |
| 16,000 | 320.0 | 320.0 | 320 | 213.4 | 26.67 | 0.7 |
| 18,000 | 360.0 | 360.0 | 360 | 240.0 | 30.00 | 0.8 |
| 20,000 | 400.0 | 400.0 | 400 | 266.7 | 33.34 | 0.8 |
| 21,000 | 420.0 | 420.0 | 420 | 280.0 | 35.00 | 0.9 |
| 24,000 | 480.0 | 480.0 | 480 | 320.0 | 40.00 | 1.0 |
| 25,000 | 500.0 | 500.0 | 500 | 333.4 | 41.67 | 1.0 |
| 27,000 | 540.0 | 540.0 | 540 | 360.0 | 45.00 | 1.1 |
| 28,000 | 560.0 | 560.0 | 560 | 373.4 | 46.67 | 1.2 |
| 30,000 | 600.0 | 600.0 | 600 | 400.0 | 50.00 | 1.2 |
| 32,000 | 640.0 | 640.0 | 640 | 426.7 | 53.34 | 1.3 |
| 35,000 | 700.0 | 700.0 | 700 | 466.7 | 58.34 | 1.4 |
| 36,000 | 720.0 | 720.0 | 720 | 480.0 | 60.00 | 1.5 |
| 40,000 | 800.0 | 800.0 | 800 | 533.4 | 66.67 | 1.6 |
| 42,000 | 840.0 | 840.0 | 840 | 560.0 | 70.00 | 1.7 |
| 45,000 | 900.0 | 900.0 | 900 | 600.0 | 75.00 | 1.8 |
| 48,000 | 960.0 | 960.0 | 960 | 640.0 | 80.00 | 2.0 |
| 50,000 | 1,000.0 | 1,000.0 | 1,000 | 666.7 | 83.34 | 2.0 |
| 54,000 | 1,080.0 | 1,080.0 | 1,080 | 720.0 | 90.00 | 2.2 |
| 60,000 | 1,200.0 | 1,200.0 | 1,200 | 800.0 | 100.00 | 2.4 |
| 80,000 | 1,600.0 | 1,600.0 | 1,600 | 1,066.7 | 133.34 | 3.2 |
| 90,000 | 1,800.0 | 1,800.0 | 1,800 | 1,200.0 | 150.00 | 3.6 |
| 100,000 | 2,000.0 | 2,000.0 | 2,000 | 1,333.4 | 166.67 | 4.0 |
| 120,000 | 2,400.0 | 2,400.0 | 2,400 | 1,600.0 | 200.00 | 4.8 |
| 150,000 | 3,000.0 | 3,000.0 | 3,000 | 2,000.0 | 250.00 | 6.0 |
| 160,000 | 3,200.0 | 3,200.0 | 3,200 | 2,133.4 | 266.67 | 6.4 |
| 180,000 | 3,600.0 | 3,600.0 | 3,600 | 2,400.0 | 300.00 | 7.2 |
| 200,000 | 4,000.0 | 4,000.0 | 4,000 | 2,666.7 | 333.34 | 8.0 |
| 240,000 | 4,800.0 | 4,800.0 | 4,800 | 3,200.0 | 400.00 | 9.6 |
| 250,000 | 5,000.0 | 5,000.0 | 5,000 | 3,333.4 | 416.67 | 10.0 |
| 300,000 | 6,000.0 | 6,000.0 | 6,000 | 4,000.0 | 500.00 | 12.0 |

## High Efficiency ContraGravity Drv (TL 12)

| Thrust (tonnes) | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew (Mx) |
|---|---|---|---|---|---|---|
| 100 | 1.3 | 2.0 | 2 | 0.7 | 0.20 | 0.1 |
| 200 | 2.7 | 4.0 | 4 | 1.4 | 0.40 | 0.1 |
| 300 | 4.0 | 6.0 | 6 | 2.0 | 0.60 | 0.1 |
| 400 | 5.3 | 8.0 | 8 | 2.7 | 0.80 | 0.1 |
| 500 | 6.7 | 10.0 | 10 | 3.4 | 1.00 | 0.1 |
| 600 | 8.0 | 12.0 | 12 | 4.0 | 1.20 | 0.1 |
| 800 | 10.7 | 16.0 | 16 | 5.4 | 1.60 | 0.1 |
| 900 | 12.0 | 18.0 | 18 | 6.0 | 1.80 | 0.1 |
| 1,000 | 13.3 | 20.0 | 20 | 6.7 | 2.00 | 0.1 |
| 1,200 | 16.0 | 24.0 | 24 | 8.0 | 2.40 | 0.1 |
| 1,400 | 18.7 | 28.0 | 28 | 9.4 | 2.80 | 0.1 |
| 1,500 | 20.0 | 30.0 | 30 | 10.0 | 3.00 | 0.1 |
| 1,600 | 21.3 | 32.0 | 32 | 10.7 | 3.20 | 0.1 |
| 1,800 | 24.0 | 36.0 | 36 | 12.0 | 3.60 | 0.1 |
| 2,000 | 26.7 | 40.0 | 40 | 13.4 | 4.00 | 0.1 |
| 2,100 | 28.0 | 42.0 | 42 | 14.0 | 4.20 | 0.1 |
| 2,400 | 32.0 | 48.0 | 48 | 16.0 | 4.80 | 0.1 |
| 2,500 | 33.3 | 50.0 | 50 | 16.7 | 5.00 | 0.1 |
| 2,700 | 36.0 | 54.0 | 54 | 18.0 | 5.40 | 0.1 |
| 2,800 | 37.3 | 56.0 | 56 | 18.7 | 5.60 | 0.1 |
| 3,000 | 40.0 | 60.0 | 60 | 20.0 | 6.00 | 0.1 |
| 3,200 | 42.7 | 64.0 | 64 | 21.4 | 6.40 | 0.1 |
| 3,500 | 46.7 | 70.0 | 70 | 23.4 | 7.00 | 0.1 |
| 3,600 | 48.0 | 72.0 | 72 | 24.0 | 7.20 | 0.1 |
| 4,000 | 53.3 | 80.0 | 80 | 26.7 | 8.00 | 0.2 |
| 4,200 | 56.0 | 84.0 | 84 | 28.0 | 8.40 | 0.2 |
| 4,500 | 60.0 | 90.0 | 90 | 30.0 | 9.00 | 0.2 |
| 4,800 | 64.0 | 96.0 | 96 | 32.0 | 9.60 | 0.2 |
| 5,000 | 66.7 | 100.0 | 100 | 33.4 | 10.00 | 0.2 |
| 5,400 | 72.0 | 108.0 | 108 | 36.0 | 10.80 | 0.2 |
| 6,000 | 80.0 | 120.0 | 120 | 40.0 | 12.00 | 0.2 |
| 8,000 | 106.7 | 160.0 | 160 | 53.4 | 16.00 | 0.3 |
| 9,000 | 120.0 | 180.0 | 180 | 60.0 | 18.00 | 0.3 |
| 10,000 | 133.3 | 200.0 | 200 | 66.7 | 20.00 | 0.3 |
| 12,000 | 160.0 | 240.0 | 240 | 80.0 | 24.00 | 0.4 |
| 14,000 | 186.7 | 280.0 | 280 | 93.4 | 28.00 | 0.4 |
| 15,000 | 200.0 | 300.0 | 300 | 100.0 | 30.00 | 0.4 |
| 16,000 | 213.3 | 320.0 | 320 | 106.7 | 32.00 | 0.5 |
| 18,000 | 240.0 | 360.0 | 360 | 120.0 | 36.00 | 0.5 |
| 20,000 | 266.7 | 400.0 | 400 | 133.4 | 40.00 | 0.6 |
| 21,000 | 280.0 | 420.0 | 420 | 140.0 | 42.00 | 0.6 |
| 24,000 | 320.0 | 480.0 | 480 | 160.0 | 48.00 | 0.7 |
| 25,000 | 333.3 | 500.0 | 500 | 166.7 | 50.00 | 0.7 |
| 27,000 | 360.0 | 540.0 | 540 | 180.0 | 54.00 | 0.8 |
| 28,000 | 373.3 | 560.0 | 560 | 186.7 | 56.00 | 0.8 |
| 30,000 | 400.0 | 600.0 | 600 | 200.0 | 60.00 | 0.8 |
| 32,000 | 426.7 | 640.0 | 640 | 213.4 | 64.00 | 0.9 |
| 35,000 | 466.7 | 700.0 | 700 | 233.4 | 70.00 | 1.0 |
| 36,000 | 480.0 | 720.0 | 720 | 240.0 | 72.00 | 1.0 |
| 40,000 | 533.3 | 800.0 | 800 | 266.7 | 80.00 | 1.1 |
| 42,000 | 560.0 | 840.0 | 840 | 280.0 | 84.00 | 1.2 |
| 45,000 | 600.0 | 900.0 | 900 | 300.0 | 90.00 | 1.2 |
| 48,000 | 640.0 | 960.0 | 960 | 320.0 | 96.00 | 1.3 |
| 50,000 | 666.7 | 1,000.0 | 1,000 | 333.4 | 100.00 | 1.4 |
| 54,000 | 720.0 | 1,080.0 | 1,080 | 360.0 | 108.00 | 1.5 |
| 60,000 | 800.0 | 1,200.0 | 1,200 | 400.0 | 120.00 | 1.6 |
| 80,000 | 1,066.7 | 1,600.0 | 1,600 | 533.4 | 160.00 | 2.2 |
| 90,000 | 1,200.0 | 1,800.0 | 1,800 | 600.0 | 180.00 | 2.4 |
| 100,000 | 1,333.3 | 2,000.0 | 2,000 | 666.7 | 200.00 | 2.7 |
| 120,000 | 1,600.0 | 2,400.0 | 2,400 | 800.0 | 240.00 | 3.2 |
| 150,000 | 2,000.0 | 3,000.0 | 3,000 | 1,000.0 | 300.00 | 4.0 |
| 160,000 | 2,133.3 | 3,200.0 | 3,200 | 1,066.7 | 320.00 | 4.3 |
| 180,000 | 2,400.0 | 3,600.0 | 3,600 | 1,200.0 | 360.00 | 4.8 |
| 200,000 | 2,666.7 | 4,000.0 | 4,000 | 1,333.4 | 400.00 | 5.4 |
| 240,000 | 3,200.0 | 4,800.0 | 4,800 | 1,600.0 | 480.00 | 6.4 |
| 250,000 | 3,333.3 | 5,000.0 | 5,000 | 1,666.7 | 500.00 | 6.7 |
| 300,000 | 4,000.0 | 6,000.0 | 6,000 | 2,000.0 | 600.00 | 8.0 |

## Fusion Drive (TL 9)

| Thrust (tonnes) | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Fuel ($m^3$/hr) | Crew (Mx) |
|---|---|---|---|---|---|---|---|
| 100 | 11 | 11 | 1 | (2.0) | 3.9 | 0.49 | 0.1 |
| 200 | 22 | 22 | 1 | (4.0) | 7.8 | 0.98 | 0.1 |
| 300 | 33 | 33 | 2 | (6.0) | 11.7 | 1.47 | 0.1 |
| 400 | 45 | 45 | 2 | (8.0) | 15.6 | 1.96 | 0.1 |
| 500 | 56 | 56 | 3 | (10.0) | 19.4 | 2.45 | 0.2 |
| 600 | 67 | 67 | 3 | (12.0) | 23.3 | 2.94 | 0.2 |
| 800 | 89 | 89 | 4 | (16.0) | 31.1 | 3.92 | 0.2 |
| 900 | 100 | 100 | 5 | (18.0) | 35.0 | 4.41 | 0.2 |
| 1,000 | 111 | 111 | 5 | (20.0) | 38.9 | 4.90 | 0.3 |
| 1,200 | 133 | 133 | 6 | (24.0) | 46.7 | 5.88 | 0.3 |
| 1,400 | 156 | 156 | 7 | (28.0) | 54.4 | 6.86 | 0.4 |
| 1,500 | 167 | 167 | 8 | (30.0) | 58.3 | 7.35 | 0.4 |
| 1,600 | 178 | 178 | 8 | (32.0) | 62.2 | 7.84 | 0.4 |
| 1,800 | 200 | 200 | 9 | (36.0) | 70.0 | 8.82 | 0.4 |
| 2,000 | 222 | 222 | 10 | (40.0) | 77.8 | 9.80 | 0.5 |
| 2,100 | 233 | 233 | 11 | (42.0) | 81.7 | 10.29 | 0.5 |
| 2,400 | 267 | 267 | 12 | (48.0) | 93.3 | 11.76 | 0.6 |
| 2,500 | 278 | 278 | 13 | (50.0) | 97.2 | 12.25 | 0.6 |
| 2,700 | 300 | 300 | 14 | (54.0) | 105.0 | 13.23 | 0.6 |
| 2,800 | 311 | 311 | 14 | (56.0) | 108.9 | 13.72 | 0.7 |
| 3,000 | 333 | 333 | 15 | (60.0) | 116.7 | 14.70 | 0.7 |
| 3,200 | 356 | 356 | 16 | (64.0) | 124.4 | 15.68 | 0.8 |
| 3,500 | 389 | 389 | 18 | (70.0) | 136.1 | 17.15 | 0.8 |
| 3,600 | 400 | 400 | 18 | (72.0) | 140.0 | 17.64 | 0.8 |
| 4,000 | 445 | 445 | 20 | (80.0) | 155.6 | 19.60 | 0.9 |
| 4,200 | 467 | 467 | 21 | (84.0) | 163.3 | 20.58 | 1.0 |
| 4,500 | 500 | 500 | 23 | (90.0) | 175.0 | 22.05 | 1.0 |
| 4,800 | 533 | 533 | 24 | (96.0) | 186.7 | 23.52 | 1.1 |
| 5,000 | 556 | 556 | 25 | (100.0) | 194.4 | 24.50 | 1.2 |
| 5,400 | 600 | 600 | 27 | (108.0) | 210.0 | 26.46 | 1.2 |
| 6,000 | 667 | 667 | 30 | (120.0) | 233.3 | 29.40 | 1.4 |
| 8,000 | 889 | 889 | 40 | (160.0) | 311.1 | 39.70 | 1.8 |
| 9,000 | 1,000 | 1,000 | 45 | (180.0) | 350.0 | 44.10 | 2.0 |
| 10,000 | 1,111 | 1,111 | 50 | (200.0) | 388.9 | 49.00 | 2.3 |
| 12,000 | 1,333 | 1,333 | 60 | (240.0) | 466.7 | 58.80 | 2.7 |
| 14,000 | 1,556 | 1,556 | 70 | (280.0) | 544.4 | 68.60 | 3.2 |
| 15,000 | 1,667 | 1,667 | 75 | (300.0) | 583.3 | 73.50 | 3.4 |
| 16,000 | 1,778 | 1,778 | 80 | (320.0) | 622.2 | 78.40 | 3.6 |
| 18,000 | 2,000 | 2,000 | 90 | (360.0) | 700.0 | 88.20 | 4.0 |
| 20,000 | 2,222 | 2,222 | 100 | (400.0) | 777.8 | 98.00 | 4.5 |
| 21,000 | 2,333 | 2,333 | 105 | (420.0) | 816.7 | 102.90 | 4.7 |
| 24,000 | 2,667 | 2,667 | 120 | (480.0) | 933.3 | 117.60 | 5.4 |
| 25,000 | 2,778 | 2,778 | 125 | (500.0) | 972.2 | 122.50 | 5.6 |
| 27,000 | 3,000 | 3,000 | 135 | (540.0) | 1,050.0 | 132.30 | 6.0 |
| 28,000 | 3,111 | 3,111 | 140 | (560.0) | 1,088.9 | 137.20 | 6.3 |
| 30,000 | 3,333 | 3,333 | 150 | (600.0) | 1,166.7 | 147.00 | 6.7 |
| 32,000 | 3,556 | 3,556 | 160 | (640.0) | 1,244.4 | 156.80 | 7.2 |
| 35,000 | 3,889 | 3,889 | 175 | (700.0) | 1,361.1 | 171.50 | 7.8 |
| 36,000 | 4,000 | 4,000 | 180 | (720.0) | 1,400.0 | 176.40 | 8.0 |
| 40,000 | 4,445 | 4,445 | 200 | (800.0) | 1,555.6 | 196.00 | 8.9 |
| 42,000 | 4,667 | 4,667 | 210 | (840.0) | 1,633.3 | 205.80 | 9.4 |
| 45,000 | 5,000 | 5,000 | 225 | (900.0) | 1,750.0 | 220.50 | 10.0 |
| 48,000 | 5,333 | 5,333 | 240 | (960.0) | 1,866.7 | 235.20 | 10.7 |
| 50,000 | 5,556 | 5,556 | 250 | (1,000.0) | 1,944.4 | 245.00 | 11.2 |
| 54,000 | 6,000 | 6,000 | 270 | (1,080.0) | 2,100.0 | 264.60 | 12.0 |
| 60,000 | 6,667 | 6,667 | 300 | (1,200.0) | 2,333.3 | 294.00 | 13.4 |
| 80,000 | 8,889 | 8,889 | 400 | (1,600.0) | 3,111.1 | 392.00 | 17.8 |
| 90,000 | 10,000 | 10,000 | 450 | (1,800.0) | 3,500.0 | 441.00 | 20.0 |
| 100,000 | 11,111 | 11,111 | 500 | (2,000.0) | 3,888.9 | 490.00 | 22.3 |
| 120,000 | 13,333 | 13,333 | 600 | (2,400.0) | 4,666.7 | 588.00 | 26.7 |
| 150,000 | 16,667 | 16,667 | 750 | (3,000.0) | 5,833.3 | 735.00 | 33.4 |
| 160,000 | 17,778 | 17,778 | 800 | (3,200.0) | 6,222.2 | 784.00 | 35.6 |
| 180,000 | 20,000 | 20,000 | 900 | (3,600.0) | 7,000.0 | 882.00 | 40.0 |
| 200,000 | 22,222 | 22,222 | 1,000 | (4,000.0) | 7,777.8 | 980.00 | 44.5 |
| 240,000 | 26,667 | 26,667 | 1,200 | (4,800.0) | 9,333.3 | 1,176.00 | 53.4 |
| 250,000 | 27,778 | 27,778 | 1,250 | (5,000.0) | 9,722.2 | 1,225.00 | 55.6 |
| 300,000 | 33,333 | 33,333 | 1,500 | (6,000.0) | 11,666.7 | 1,470.00 | 66.7 |

## HEPlaR Drives (TL 10)

| Thrust (tonnes) | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Fuel ($m^3$/hr) | Crew (Mx) |
|---|---|---|---|---|---|---|---|
| 100 | 0.5 | 0.5 | 1 | 5.0 | 0.005 | 1.25 | 0.1 |
| 200 | 1.0 | 1.0 | 1 | 10.0 | 0.010 | 2.50 | 0.1 |
| 300 | 1.5 | 1.5 | 2 | 15.0 | 0.015 | 3.75 | 0.1 |
| 400 | 2.0 | 2.0 | 2 | 20.0 | 0.020 | 5.00 | 0.1 |
| 500 | 2.5 | 2.5 | 3 | 25.0 | 0.025 | 6.25 | 0.1 |
| 600 | 3.0 | 3.0 | 3 | 30.0 | 0.030 | 7.50 | 0.1 |
| 800 | 4.0 | 4.0 | 4 | 40.0 | 0.040 | 10.00 | 0.1 |
| 900 | 4.5 | 4.5 | 5 | 45.0 | 0.045 | 11.25 | 0.1 |
| 1,000 | 5.0 | 5.0 | 5 | 50.0 | 0.050 | 12.50 | 0.1 |
| 1,200 | 6.0 | 6.0 | 6 | 60.0 | 0.060 | 15.00 | 0.1 |
| 1,400 | 7.0 | 7.0 | 7 | 70.0 | 0.070 | 17.50 | 0.1 |
| 1,500 | 7.5 | 7.5 | 8 | 75.0 | 0.075 | 18.75 | 0.1 |
| 1,600 | 8.0 | 8.0 | 8 | 80.0 | 0.080 | 20.00 | 0.1 |
| 1,800 | 9.0 | 9.0 | 9 | 90.0 | 0.090 | 22.50 | 0.1 |
| 2,000 | 10.0 | 10.0 | 10 | 100.0 | 0.100 | 25.00 | 0.1 |
| 2,100 | 10.5 | 10.5 | 11 | 105.0 | 0.105 | 26.25 | 0.1 |
| 2,400 | 12.0 | 12.0 | 12 | 120.0 | 0.120 | 30.00 | 0.1 |
| 2,500 | 12.5 | 12.5 | 13 | 125.0 | 0.125 | 31.25 | 0.1 |
| 2,700 | 13.5 | 13.5 | 14 | 135.0 | 0.135 | 33.75 | 0.1 |
| 2,800 | 14.0 | 14.0 | 14 | 140.0 | 0.140 | 35.00 | 0.1 |
| 3,000 | 15.0 | 15.0 | 15 | 150.0 | 0.150 | 37.50 | 0.1 |
| 3,200 | 16.0 | 16.0 | 16 | 160.0 | 0.160 | 40.00 | 0.1 |
| 3,500 | 17.5 | 17.5 | 18 | 175.0 | 0.175 | 43.75 | 0.1 |
| 3,600 | 18.0 | 18.0 | 18 | 180.0 | 0.180 | 45.00 | 0.1 |
| 4,000 | 20.0 | 20.0 | 20 | 200.0 | 0.200 | 50.00 | 0.1 |
| 4,200 | 21.0 | 21.0 | 21 | 210.0 | 0.210 | 52.50 | 0.1 |
| 4,500 | 22.5 | 22.5 | 23 | 225.0 | 0.225 | 56.25 | 0.1 |
| 4,800 | 24.0 | 24.0 | 24 | 240.0 | 0.240 | 60.00 | 0.1 |
| 5,000 | 25.0 | 25.0 | 25 | 250.0 | 0.250 | 62.50 | 0.1 |
| 5,400 | 27.0 | 27.0 | 27 | 270.0 | 0.270 | 67.50 | 0.1 |
| 6,000 | 30.0 | 30.0 | 30 | 300.0 | 0.300 | 75.00 | 0.1 |
| 8,000 | 40.0 | 40.0 | 40 | 400.0 | 0.400 | 100.00 | 0.1 |
| 9,000 | 45.0 | 45.0 | 45 | 450.0 | 0.450 | 112.50 | 0.1 |
| 10,000 | 50.0 | 50.0 | 50 | 500.0 | 0.500 | 125.00 | 0.1 |
| 12,000 | 60.0 | 60.0 | 60 | 600.0 | 0.600 | 150.00 | 0.2 |
| 14,000 | 70.0 | 70.0 | 70 | 700.0 | 0.700 | 175.00 | 0.2 |
| 15,000 | 75.0 | 75.0 | 75 | 750.0 | 0.750 | 187.50 | 0.2 |
| 16,000 | 80.0 | 80.0 | 80 | 800.0 | 0.800 | 200.00 | 0.2 |
| 18,000 | 90.0 | 90.0 | 90 | 900.0 | 0.900 | 225.00 | 0.2 |
| 20,000 | 100.0 | 100.0 | 100 | 1,000.0 | 1.000 | 250.00 | 0.2 |
| 21,000 | 105.0 | 105.0 | 105 | 1,050.0 | 1.050 | 262.50 | 0.3 |
| 24,000 | 120.0 | 120.0 | 120 | 1,200.0 | 1.200 | 300.00 | 0.3 |
| 25,000 | 125.0 | 125.0 | 125 | 1,250.0 | 1.250 | 312.50 | 0.3 |
| 27,000 | 135.0 | 135.0 | 135 | 1,350.0 | 1.350 | 337.50 | 0.3 |
| 28,000 | 140.0 | 140.0 | 140 | 1,400.0 | 1.400 | 350.00 | 0.3 |
| 30,000 | 150.0 | 150.0 | 150 | 1,500.0 | 1.500 | 375.00 | 0.3 |
| 32,000 | 160.0 | 160.0 | 160 | 1,600.0 | 1.600 | 400.00 | 0.4 |
| 35,000 | 175.0 | 175.0 | 175 | 1,750.0 | 1.750 | 437.50 | 0.4 |
| 36,000 | 180.0 | 180.0 | 180 | 1,800.0 | 1.800 | 450.00 | 0.4 |
| 40,000 | 200.0 | 200.0 | 200 | 2,000.0 | 2.000 | 500.00 | 0.4 |
| 42,000 | 210.0 | 210.0 | 210 | 2,100.0 | 2.100 | 525.00 | 0.5 |
| 45,000 | 225.0 | 225.0 | 225 | 2,250.0 | 2.250 | 562.50 | 0.5 |
| 48,000 | 240.0 | 240.0 | 240 | 2,400.0 | 2.400 | 600.00 | 0.5 |
| 50,000 | 250.0 | 250.0 | 250 | 2,500.0 | 2.500 | 625.00 | 0.5 |
| 54,000 | 270.0 | 270.0 | 270 | 2,700.0 | 2.700 | 675.00 | 0.6 |
| 60,000 | 300.0 | 300.0 | 300 | 3,000.0 | 3.000 | 750.00 | 0.6 |
| 80,000 | 400.0 | 400.0 | 400 | 4,000.0 | 4.000 | 1,000.00 | 0.8 |
| 90,000 | 450.0 | 450.0 | 450 | 4,500.0 | 4.500 | 1,125.00 | 0.9 |
| 100,000 | 500.0 | 500.0 | 500 | 5,000.0 | 5.000 | 1,250.00 | 1.0 |
| 120,000 | 600.0 | 600.0 | 600 | 6,000.0 | 6.000 | 1,500.00 | 1.2 |
| 150,000 | 750.0 | 750.0 | 750 | 7,500.0 | 7.500 | 1,875.00 | 1.5 |
| 160,000 | 800.0 | 800.0 | 800 | 8,000.0 | 8.000 | 2,000.00 | 1.6 |
| 180,000 | 900.0 | 900.0 | 900 | 9,000.0 | 9.000 | 2,250.00 | 1.8 |
| 200,000 | 1,000.0 | 1,000.0 | 1,000 | 10,000.0 | 10.000 | 2,500.00 | 2.0 |
| 240,000 | 1,200.0 | 1,200.0 | 1,200 | 12,000.0 | 12.000 | 3,000.00 | 2.4 |
| 250,000 | 1,250.0 | 1,250.0 | 1,250 | 12,500.0 | 12.500 | 3,125.00 | 2.5 |
| 300,000 | 1,500.0 | 1,500.0 | 1,500 | 15,000.0 | 15.000 | 3,750.00 | 3.0 |

## Thruster Plate Drives (TL 11+)

| Thrust (tonnes) | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew (Mx) |
|---|---|---|---|---|---|---|
| 100 | 5 | 3 | 1 | 2.5 | 0.6 | 0.1 |
| 200 | 10 | 5 | 1 | 5.0 | 1.3 | 0.1 |
| 300 | 15 | 8 | 2 | 7.5 | 1.9 | 0.1 |
| 400 | 20 | 10 | 2 | 10.0 | 2.5 | 0.1 |
| 500 | 25 | 13 | 3 | 12.5 | 3.1 | 0.1 |
| 600 | 30 | 15 | 3 | 15.0 | 3.8 | 0.1 |
| 800 | 40 | 20 | 4 | 20.0 | 5.0 | 0.1 |
| 900 | 45 | 23 | 5 | 22.5 | 5.6 | 0.1 |
| 1,000 | 50 | 25 | 5 | 25.0 | 6.3 | 0.1 |
| 1,200 | 60 | 30 | 6 | 30.0 | 7.5 | 0.2 |
| 1,400 | 70 | 35 | 7 | 35.0 | 8.8 | 0.2 |
| 1,500 | 75 | 38 | 8 | 37.5 | 9.4 | 0.2 |
| 1,600 | 80 | 40 | 8 | 40.0 | 10.0 | 0.2 |
| 1,800 | 90 | 45 | 9 | 45.0 | 11.3 | 0.2 |
| 2,000 | 100 | 50 | 10 | 50.0 | 12.5 | 0.2 |
| 2,100 | 105 | 53 | 11 | 52.5 | 13.1 | 0.3 |
| 2,400 | 120 | 60 | 12 | 60.0 | 15.0 | 0.3 |
| 2,500 | 125 | 63 | 13 | 62.5 | 15.6 | 0.3 |
| 2,700 | 135 | 68 | 14 | 67.5 | 16.9 | 0.3 |
| 2,800 | 140 | 70 | 14 | 70.0 | 17.5 | 0.3 |
| 3,000 | 150 | 75 | 15 | 75.0 | 18.8 | 0.3 |
| 3,200 | 160 | 80 | 16 | 80.0 | 20.0 | 0.4 |
| 3,500 | 175 | 88 | 18 | 87.5 | 21.9 | 0.4 |
| 3,600 | 180 | 90 | 18 | 90.0 | 22.5 | 0.4 |
| 4,000 | 200 | 100 | 20 | 100.0 | 25.0 | 0.4 |
| 4,200 | 210 | 105 | 21 | 105.0 | 26.3 | 0.5 |
| 4,500 | 225 | 113 | 23 | 112.5 | 28.1 | 0.5 |
| 4,800 | 240 | 120 | 24 | 120.0 | 30.0 | 0.5 |
| 5,000 | 250 | 125 | 25 | 125.0 | 31.3 | 0.5 |
| 5,400 | 270 | 135 | 27 | 135.0 | 33.8 | 0.6 |
| 6,000 | 300 | 150 | 30 | 150.0 | 37.5 | 0.6 |
| 8,000 | 400 | 200 | 40 | 200.0 | 50.0 | 0.8 |
| 9,000 | 450 | 225 | 45 | 225.0 | 56.3 | 0.9 |
| 10,000 | 500 | 250 | 50 | 250.0 | 62.5 | 1.0 |
| 12,000 | 600 | 300 | 60 | 300.0 | 75.0 | 1.2 |
| 14,000 | 700 | 350 | 70 | 350.0 | 87.5 | 1.4 |
| 15,000 | 750 | 375 | 75 | 375.0 | 93.8 | 1.5 |
| 16,000 | 800 | 400 | 80 | 400.0 | 100.0 | 1.6 |
| 18,000 | 900 | 450 | 90 | 450.0 | 112.5 | 1.8 |
| 20,000 | 1,000 | 500 | 100 | 500.0 | 125.0 | 2.0 |
| 21,000 | 1,050 | 525 | 105 | 525.0 | 131.3 | 2.1 |
| 24,000 | 1,200 | 600 | 120 | 600.0 | 150.0 | 2.4 |
| 25,000 | 1,250 | 625 | 125 | 625.0 | 156.3 | 2.5 |
| 27,000 | 1,350 | 675 | 135 | 675.0 | 168.8 | 2.7 |
| 28,000 | 1,400 | 700 | 140 | 700.0 | 175.0 | 2.8 |
| 30,000 | 1,500 | 750 | 150 | 750.0 | 187.5 | 3.0 |
| 32,000 | 1,600 | 800 | 160 | 800.0 | 200.0 | 3.2 |
| 35,000 | 1,750 | 875 | 175 | 875.0 | 218.8 | 3.5 |
| 36,000 | 1,800 | 900 | 180 | 900.0 | 225.0 | 3.6 |
| 40,000 | 2,000 | 1,000 | 200 | 1,000.0 | 250.0 | 4.0 |
| 42,000 | 2,100 | 1,050 | 210 | 1,050.0 | 262.5 | 4.2 |
| 45,000 | 2,250 | 1,125 | 225 | 1,125.0 | 281.3 | 4.5 |
| 48,000 | 2,400 | 1,200 | 240 | 1,200.0 | 300.0 | 4.8 |
| 50,000 | 2,500 | 1,250 | 250 | 1,250.0 | 312.5 | 5.0 |
| 54,000 | 2,700 | 1,350 | 270 | 1,350.0 | 337.5 | 5.4 |
| 60,000 | 3,000 | 1,500 | 300 | 1,500.0 | 375.0 | 6.0 |
| 80,000 | 4,000 | 2,000 | 400 | 2,000.0 | 500.0 | 8.0 |
| 90,000 | 4,500 | 2,250 | 450 | 2,250.0 | 562.5 | 9.0 |
| 100,000 | 5,000 | 2,500 | 500 | 2,500.0 | 625.0 | 10.0 |
| 120,000 | 6,000 | 3,000 | 600 | 3,000.0 | 750.0 | 12.0 |
| 150,000 | 7,500 | 3,750 | 750 | 3,750.0 | 937.5 | 15.0 |
| 160,000 | 8,000 | 4,000 | 800 | 4,000.0 | 1,000.0 | 16.0 |
| 180,000 | 9,000 | 4,500 | 900 | 4,500.0 | 1,125.0 | 18.0 |
| 200,000 | 10,000 | 5,000 | 1,000 | 5,000.0 | 1,250.0 | 20.0 |
| 240,000 | 12,000 | 6,000 | 1,200 | 6,000.0 | 1,500.0 | 24.0 |
| 250,000 | 12,500 | 6,250 | 1,250 | 6,250.0 | 1,562.5 | 25.0 |
| 300,000 | 15,000 | 7,500 | 1,500 | 7,500.0 | 1,875.0 | 30.0 |

## Empty Turret Sockets

| TL | Volume ($m^3$) | Area ($m^2$) | Price (MCr) |
|---|---|---|---|
| Any | 42 | 10 | 0.005 |
| Any | 84 | 16 | 0.005 |

## Light Laser Turrets (3 displacement ton socket)

| Description | TL | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew Gn | Crew Mx | Very Short Range | Short Range | Medium Range | Long Range | ROF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 67Mj Laser | 10 | 61.82 | 42 | 10 | 1.86 | 1.75 | 1 | 0.12 | 1: 1/7-20 | 2: 1/6-20 | 4: 1/3-10 | 8: 1/2-5 | 10 |
| 72Mj Laser | 11 | 56.73 | 42 | 10 | 2.00 | 2.28 | 1 | 0.11 | 5: 1/7-21 | 10: 1/5-15 | 20: 1/2-7 | 40: 1/1-4 | 10 |
| 95Mj Laser | 12 | 58.67 | 42 | 10 | 2.64 | 1.43 | 1 | 0.12 | 10: 1/8-24 | 20: 1/4-13 | 40: 1/2-7 | 80: 1/1-3 | 10 |
| 105Mj Laser | 13 | 58.52 | 42 | 10 | 2.92 | 1.45 | 1 | 0.12 | 10: 1/8-26 | 20: 1/8-26 | 40: 1/8-26 | 80: 1/8-26 | 10 |
| 314Mj Laser• | 13 | 56.87 | 42 | 10 | 2.68 | 1.86 | 1 | 0.11 | 10: 1/14-44 | 20: 1/8-27 | 40: 1/4-13 | 80: 1/2-7 | 10 |
| 135Mj Laser | 14 | 61.57 | 42 | 10 | 3.75 | 1.15 | 1 | 0.12 | 10: 1/9-29 | 20: 1/9-29 | 40: 1/9-29 | 80: 1/9-29 | 10 |
| 455Mj Laser• | 14 | 59.36 | 42 | 10 | 3.37 | 1.77 | 1 | 0.12 | 10: 1/17-53 | 20: 1/10-32 | 40: 1/5-16 | 80: 1/3-8 | 10 |
| 170Mj Laser | 15 | 64.43 | 42 | 10 | 4.72 | 0.95 | 1 | 0.13 | 10: 1/10-33 | 20: 1/10-33 | 40: 1/10-33 | 80: 1/10-33 | 10 |
| 620Mj Laser• | 15 | 60.57 | 42 | 10 | 4.05 | 1.82 | 1 | 0.12 | 10: 1/20-62 | 20: 1/12-37 | 40: 1/6-19 | 80: 1/3-9 | 10 |

## Heavy Laser Turrets (6 displacement ton socket)

| Description | TL | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew Gn | Crew Mx | Very Short Range | Short Range | Medium Range | Long Range | ROF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 130Mj Laser | 10 | 128.58 | 84 | 16 | 3.61 | 5.03 | 1 | 0.26 | 3: 1/9-29 | 6: 1/5-14 | 12: 1/2-7 | 24: 1/1-4 | 10 |
| 143Mj Laser | 11 | 119.74 | 84 | 16 | 3.97 | 6.08 | 1 | 0.24 | 10: 1/10-30 | 20: 1/5-16 | 40: 1/3-8 | 80: 1/1-4 | 10 |
| 251Mj Laser | 12 | 139.69 | 84 | 16 | 6.97 | 2.43 | 1 | 0.28 | 10: 1/13-40 | 20: 1/11-33 | 40: 1/5-17 | 80: 1/3-8 | 10 |
| 275Mj Laser | 13 | 138.32 | 84 | 16 | 7.64 | 2.49 | 1 | 0.28 | 10: 1/13-41 | 20: 1/13-41 | 40: 1/13-41 | 80: 1/13-41 | 10 |
| 650Mj Laser• | 13 | 110.54 | 84 | 16 | 5.56 | 3.52 | 1 | 0.22 | 10: 1/20-64 | 20: 1/15-48 | 40: 1/8-24 | 80: 1/4-12 | 10 |
| 325Mj Laser | 14 | 141.37 | 84 | 16 | 9.03 | 2.29 | 1 | 0.28 | 10: 1/14-45 | 20: 1/14-45 | 40: 1/14-45 | 80: 1/14-45 | 10 |
| 700Mj Laser• | 14 | 92.00 | 84 | 16 | 5.19 | 3.20 | 1 | 0.18 | 10: 1/21-66 | 20: 1/16-50 | 40: 1/8-25 | 80: 1/4-12 | 10 |
| 385Mj Laser | 15 | 144.07 | 84 | 16 | 10.69 | 2.20 | 1 | 0.29 | 10: 1/16-49 | 20: 1/16-49 | 40: 1/16-49 | 80: 1/16-49 | 10 |
| 750Mj Laser• | 15 | 76.89 | 84 | 16 | 4.90 | 3.00 | 1 | 0.15 | 10: 1/22-68 | 20: 1/16-51 | 40: 1/8-26 | 80: 1/4-13 | 10 |

## Missile Launcher Turrets

| Type | TL | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew Factor | Missile Size ($m^3$) | Ready Missiles |
|---|---|---|---|---|---|---|---|---|---|
| Standard | 8 | 28.4 | 42 | 10 | 0.15 | 0.08 | Gn 1, Mx 0.06 | 7 | 3 |
| Heavy | 8 | 70.4 | 84 | 16 | 0.15 | 0.11 | Gn 1, Mx 0.15 | 7 | 5 |

## Laser Bays (50 displacement ton)

| Description | TL | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew Gn | Crew Mx | Very Short Range | Short Range | Medium Range | Long Range | ROF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 550Mj Laser | 11 | 630.08 | 700 | 48 | 21.68 | 85.45 | 1 | 1.26 | 10: 1/19-59 | 20: 1/19-59 | 40: 1/14-44 | 80: 1/7-22 | 10 |
| 600Mj Laser | 12 | 367.61 | 700 | 47 | 19.77 | 33.40 | 1 | 0.74 | 10: 1/20-61 | 20: 1/20-61 | 40: 1/20-61 | 80: 1/11-36 | 10 |
| 600Mj Laser | 12 | 394.31 | 700 | 47 | 336.43 | 38.70 | 1 | 0.79 | 10: 1/20-61 | 20: 1/20-61 | 40: 1/20-61 | 80: 1/11-36 | 200 |
| 600Mj Laser | 12 | 447.33 | 700 | 47 | 669.77 | 49.31 | 1 | 0.89 | 10: 1/20-61 | 20: 1/20-61 | 40: 1/20-61 | 80: 1/11-36 | 400 |
| 600Mj Laser | 12 | 553.36 | 700 | 47 | 1,336.4 | 70.51 | 1 | 1.11 | 10: 1/20-61 | 20: 1/20-61 | 40: 1/20-61 | 80: 1/11-36 | 800 |
| 650Mj Laser | 13 | 362.32 | 700 | 47 | 21.16 | 33.81 | 1 | 0.72 | 10: 1/20-64 | 20: 1/20-64 | 40: 1/20-64 | 80: 1/20-64 | 10 |
| 650Mj Laser | 13 | 391.23 | 700 | 47 | 364.21 | 39.55 | 1 | 0.78 | 10: 1/20-64 | 20: 1/20-64 | 40: 1/20-64 | 80: 1/20-64 | 200 |
| 650Mj Laser | 13 | 448.66 | 700 | 47 | 725.32 | 51.04 | 1 | 0.90 | 10: 1/20-64 | 20: 1/20-64 | 40: 1/20-64 | 80: 1/20-64 | 400 |
| 650Mj Laser | 13 | 563.53 | 700 | 47 | 1,447.5 | 74.01 | 1 | 1.13 | 10: 1/20-64 | 20: 1/20-64 | 40: 1/20-64 | 80: 1/20-64 | 800 |
| 700Mj Laser | 14 | 335.03 | 700 | 46 | 21.24 | 23.29 | 1 | 0.67 | 10: 1/21-66 | 20: 1/21-66 | 40: 1/21-66 | 80: 1/21-66 | 10 |
| 700Mj Laser | 14 | 366.15 | 700 | 46 | 390.69 | 29.47 | 1 | 0.73 | 10: 1/21-66 | 20: 1/21-66 | 40: 1/21-66 | 80: 1/21-66 | 200 |
| 700Mj Laser | 14 | 428.00 | 700 | 46 | 779.58 | 41.84 | 1 | 0.86 | 10: 1/21-66 | 20: 1/21-66 | 40: 1/21-66 | 80: 1/21-66 | 400 |
| 700Mj Laser | 14 | 551.70 | 700 | 46 | 1,557.4 | 66.58 | 1 | 1.10 | 10: 1/21-66 | 20: 1/21-66 | 40: 1/21-66 | 80: 1/21-66 | 800 |
| 750Mj Laser | 15 | 310.73 | 700 | 46 | 22.63 | 17.34 | 1 | 0.62 | 10: 1/22-68 | 20: 1/22-68 | 40: 1/22-68 | 80: 1/22-68 | 10 |
| 750Mj Laser | 15 | 344.07 | 700 | 46 | 418.47 | 23.97 | 1 | 0.69 | 10: 1/22-68 | 20: 1/22-68 | 40: 1/22-68 | 80: 1/22-68 | 200 |
| 750Mj Laser | 15 | 410.34 | 700 | 46 | 835.13 | 37.22 | 1 | 0.82 | 10: 1/22-68 | 20: 1/22-68 | 40: 1/22-68 | 80: 1/22-68 | 400 |
| 750Mj Laser | 15 | 542.87 | 700 | 46 | 1,668.5 | 63.73 | 1 | 1.09 | 10: 1/22-68 | 20: 1/22-68 | 40: 1/22-68 | 80: 1/22-68 | 800 |

## Laser Bays (100 displacement ton)

| Description | TL | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew Gn | Crew Mx | Very Short Range | Short Range | Medium Range | Long Range | ROF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 500Mj Laser | 10 | 839.51 | 1,400 | 78 | 27.29 | 122.08 | 1 | 1.68 | 10: 1/18-56 | 20: 1/12-38 | 40: 1/6-19 | 80: 1/3-9 | 10 |
| 500Mj Laser | 10 | 1,194.1 | 1,400 | 78 | 291.18 | 192.97 | 1 | 2.39 | 10: 1/18-56 | 20: 1/12-38 | 40: 1/6-19 | 80: 1/3-9 | 200 |

## Missile Bays

| TL | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Gn | Mx | Launchers | Reloads per Launcher |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 382.4 | 700 | 8 | 13.55 | 48.29 | 1 | 0.77 | 4 | 12 |
| 10 | 732.4 | 1,400 | 8 | 13.55 | 48.43 | 1 | 1.47 | 8 | 13 |
| 11 | 375.4 | 700 | 5 | 6.55 | 34.30 | 1 | 0.76 | 4 | 13 |
| 11 | 711.4 | 1,400 | 5 | 6.55 | 34.46 | 1 | 1.43 | 10 | 10 |
| 12 | 363.9 | 700 | 4 | 3.25 | 25.81 | 1 | 0.73 | 5 | 10 |
| 12 | 696.4 | 1,400 | 4 | 3.25 | 25.96 | 1 | 1.40 | 10 | 10 |
| 14 | 350.9 | 700 | 3 | 1.95 | 15.31 | 1 | 0.71 | 5 | 10 |
| 14 | 690.4 | 1,400 | 3 | 1.95 | 15.50 | 1 | 1.39 | 12 | 8 |
| 15 | 348.4 | 700 | 3 | 1.95 | 9.33 | 1 | 0.70 | 6 | 8 |
| 15 | 684.4 | 1,400 | 3 | 1.95 | 9.50 | 1 | 1.37 | 12 | 8 |

## Meson Bays

| Description | TL | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Gn | Mx | Len (m) | Very Short Range | Short Range | Medium Range | Long Range | ROF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,020Mj Meson Gun | 11 | 1,911.02 | 1400 | 44 | 62.51 | 105.40 | 3 | 3.82 | 16 | 5: 20 | 10: 10 | 20: 5 | 40: 2 | 10 |
| 3,250Mj Meson Gun | 12 | 2,066.46 | 1400 | 37 | 96.68 | 94.73 | 2 | 4.13 | 16 | 5: 30 | 10: 15 | 20: 8 | 40: 4 | 10 |
| 3,200Mj Meson Gun | 13 | 1,875.41 | 1400 | 36 | 95.29 | 93.00 | 2 | 3.75 | 16 | 5: 30 | 10: 15 | 20: 8 | 40: 4 | 10 |
| 3,200Mj Meson Gun | 14 | 1,636.56 | 1400 | 36 | 95.29 | 92.00 | 1 | 3.27 | 16 | 5: 35 | 10: 18 | 20: 9 | 40: 5 | 10 |
| 4,000Mj Meson Gun | 15 | 1,831.86 | 1400 | 44 | 117.51 | 105.25 | 1 | 3.66 | 16 | 5: 40 | 10: 20 | 20: 10 | 40: 5 | 10 |

## Meson Gun Spinal Mounts

| Description | TL | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Gn | Mx | Len (m) | Very Short Range | Short Range | Medium Range | Long Range | ROF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,000Mj Meson Gun | 11 | 1,572.84 | 1,285.86 | 24 | 34.18 | 129.71 | 4 | 3.15 | 46 | 5: 40 | 10: 20 | 20: 10 | 40: 5 | 10 |
| 2,000Mj Meson Gun | 11 | 4,014.31 | 3,477.38 | 44 | 61.96 | 316.72 | 11 | 8.03 | 69 | 5: 89 | 10: 41 | 20: 20 | 40: 10 | 10 |
| 5,000Mj Meson Gun | 11 | 11,959.22 | 10,689.30 | 104 | 145.29 | 939.75 | 36 | 24.0 | 89 | 5: 177 | 10: 88 | 20: 42 | 40: 21 | 10 |
| 1,000Mj Meson Gun | 12 | 813.86 | 659.67 | 13 | 30.88 | 65.60 | 1 | 1.63 | 37 | 5: 40 | 10: 20 | 20: 10 | 40: 5 | 10 |
| 2,000Mj Meson Gun | 12 | 1,861.87 | 1,657.55 | 23 | 58.66 | 141.11 | 4 | 3.72 | 55 | 5: 89 | 10: 41 | 20: 20 | 40: 10 | 10 |
| 5,000Mj Meson Gun | 12 | 5,201.09 | 4,917.58 | 53 | 141.99 | 393.62 | 12 | 10.4 | 71 | 5: 177 | 10: 88 | 20: 42 | 40: 21 | 10 |
| 1,000Mj Meson Gun | 13 | 763.82 | 633.37 | 13 | 30.88 | 65.35 | 1 | 1.53 | 37 | 5: 40 | 10: 20 | 20: 10 | 40: 5 | 10 |
| 2,000Mj Meson Gun | 13 | 1,761.76 | 1,603.70 | 23 | 58.66 | 140.60 | 3 | 3.52 | 55 | 5: 89 | 10: 41 | 20: 20 | 40: 10 | 10 |
| 5,000Mj Meson Gun | 13 | 4,950.73 | 4,780.15 | 53 | 141.99 | 392.37 | 11 | 9.90 | 71 | 5: 177 | 10: 88 | 20: 42 | 40: 21 | 10 |
| 1,000Mj Meson Gun | 14 | 607.26 | 533.53 | 12 | 29.58 | 48.40 | 1 | 1.21 | 31 | 5: 40 | 10: 20 | 20: 10 | 40: 5 | 10 |
| 2,000Mj Meson Gun | 14 | 1,373.56 | 1,354.20 | 22 | 57.36 | 111.40 | 2 | 2.75 | 46 | 5: 89 | 10: 41 | 20: 20 | 40: 10 | 10 |
| 5,000Mj Meson Gun | 14 | 3,792.58 | 4,019.73 | 52 | 140.69 | 320.41 | 7 | 7.59 | 59 | 5: 177 | 10: 88 | 20: 42 | 40: 21 | 10 |
| 1,000Mj Meson Gun | 15 | 549.72 | 499.94 | 12 | 29.58 | 42.00 | 1 | 1.10 | 31 | 5: 40 | 10: 20 | 20: 10 | 40: 5 | 10 |
| 2,000Mj Meson Gun | 15 | 1,265.97 | 1,293.48 | 22 | 57.36 | 104.75 | 2 | 2.53 | 46 | 5: 89 | 10: 41 | 20: 20 | 40: 10 | 10 |
| 5,000Mj Meson Gun | 15 | 3,534.78 | 3,876.90 | 52 | 140.69 | 313.01 | 6 | 7.07 | 59 | 5: 177 | 10: 88 | 20: 42 | 40: 21 | 10 |

## Particle Accelerator Spinal Mounts

| Description | TL | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Gn | Mx | Len (m) | Very Short Range | Short Range | Medium Range | Long Range | ROF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,025Mj NPAW | 10 | 2,783.08 | 2,404.49 | 38 | 41.87 | 240.94 | 8 | 5.57 | 60 | 10: 160 | 20: 80 | 40: 40 | 80: 20 | 10 |
| 2,500Mj NPAW | 10 | 4,489.36 | 3,536.86 | 41 | 82.84 | 299.43 | 11 | 8.98 | 70 | 10: 250 | 20: 160 | 40: 80 | 80: 40 | 10 |
| 3,600Mj NPAW | 10 | 6,950.21 | 5,606.05 | 47 | 113.40 | 461.78 | 18 | 13.90 | 100 | 10: 300 | 20: 300 | 40: 160 | 80: 80 | 10 |
| 1,025Mj NPAW | 11 | 1,238.43 | 1,128.02 | 23 | 34.87 | 113.71 | 3 | 2.48 | 40 | 10: 160 | 20: 80 | 40: 40 | 80: 20 | 10 |
| 2,500Mj NPAW | 11 | 2,716.55 | 2,382.63 | 28 | 75.84 | 197.14 | 6 | 5.43 | 65 | 10: 250 | 20: 250 | 40: 129 | 80: 64 | 10 |
| 3,600Mj NPAW | 11 | 4,664.44 | 4,476.01 | 51 | 106.40 | 371.98 | 13 | 9.33 | 70 | 10: 300 | 20: 300 | 40: 300 | 80: 163 | 10 |
| 1,025Mj NPAW | 12 | 854.17 | 702.05 | 13 | 31.57 | 69.20 | 1 | 1.71 | 40 | 10: 160 | 20: 80 | 40: 40 | 80: 20 | 10 |
| 2,025Mj NPAW | 12 | 1,692.58 | 1,413.88 | 17 | 59.35 | 116.78 | 3 | 3.39 | 60 | 10: 225 | 20: 225 | 40: 120 | 80: 60 | 10 |
| 3,600Mj NPAW | 12 | 3,135.39 | 2,701.95 | 28 | 103.10 | 208.02 | 6 | 6.27 | 70 | 10: 300 | 20: 300 | 40: 300 | 80: 161 | 10 |
| 1,025Mj NPAW | 13 | 1,003.49 | 947.90 | 20 | 31.57 | 95.67 | 2 | 2.01 | 40 | 10: 160 | 20: 160 | 40: 80 | 80: 40 | 10 |
| 2,500Mj NPAW | 13 | 1,806.33 | 1,468.97 | 19 | 72.54 | 117.52 | 3 | 3.61 | 52 | 10: 250 | 20: 250 | 40: 160 | 80: 80 | 10 |
| 3,600Mj NPAW | 13 | 3,655.76 | 3,558.82 | 43 | 103.10 | 300.45 | 8 | 7.31 | 66 | 10: 300 | 20: 300 | 40: 300 | 80: 300 | 10 |
| 1,025Mj NPAW | 14 | 660.68 | 533.29 | 10 | 30.27 | 47.94 | 1 | 1.32 | 40 | 10: 160 | 20: 160 | 40: 80 | 80: 40 | 10 |
| 2,500Mj NPAW | 14 | 1,474.67 | 1,131.97 | 14 | 71.24 | 80.74 | 2 | 2.95 | 50 | 10: 250 | 20: 250 | 40: 250 | 80: 125 | 10 |
| 3,600Mj NPAW | 14 | 2,362.13 | 1,958.61 | 26 | 101.80 | 142.56 | 3 | 4.72 | 50 | 10: 300 | 20: 300 | 40: 300 | 80: 300 | 10 |
| 1,025Mj NPAW | 15 | 826.11 | 802.61 | 17 | 30.27 | 71.47 | 1 | 1.65 | 40 | 10: 160 | 20: 160 | 40: 160 | 80: 160 | 10 |
| 2,500Mj NPAW | 15 | 1,342.36 | 1,060.73 | 17 | 71.24 | 74.05 | 1 | 2.68 | 40 | 10: 250 | 20: 250 | 40: 250 | 80: 250 | 10 |
| 3,600Mj NPAW | 15 | 1,727.36 | 1,253.23 | 17 | 101.80 | 75.97 | 1 | 3.45 | 40 | 10: 300 | 20: 300 | 40: 300 | 80: 300 | 10 |

## Master Fire Directors•

| TL | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew (Gn) | Crew (Mx) | FC Rating |
|---|---|---|---|---|---|---|---|---|
| TL 10 | 74.1 | 48.1 | 7 | 13.4 | 48.1 | 1 | 0.15 | 3 |
| TL 11 | 46.1 | 34.1 | 4 | 6.4 | 34.1 | 1 | 0.10 | 3 |
| TL 12 | 31.1 | 25.6 | 3 | 3.1 | 25.6 | 1 | 0.07 | 4 |
| TL 14 | 18.1 | 15.1 | 2 | 1.8 | 15.1 | 1 | 0.04 | 5 |
| TL 15 | 12.1 | 9.1 | 2 | 1.8 | 9.1 | 1 | 0.03 | 6 |

•The maximum number of weapons per MFD is 10.

## Black Globes

| TL | Flicker | Mass (t) | Volume ($m^3$) | Power (MW) | Price (MCr) | Crew Factor |
|---|---|---|---|---|---|---|
| 15+ | 10% | 135 | 135 | 15 | 400 | Mn: 0.27 |

## Meson Screens

| TL | Ship Size Class 7 | Ship Size Class 8 or 9 | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew (Gn) | Crew (Mx) |
|---|---|---|---|---|---|---|---|---|---|
| 12 | 158 | 112 | 155 | 207 | 100 | 10 | 20.7 | 1.6 | 0.4 |
| 12 | 250 | 177 | 380 | 507 | 250 | 25 | 50.7 | 4.0 | 0.8 |
| 12 | 354 | 250 | 755 | 1,007 | 500 | 50 | 100.7 | 7.6 | 1.6 |
| 12 | 500 | 354 | 1,505 | 2,007 | 1,000 | 100 | 200.7 | 15.2 | 3.2 |
| 12 | 791 | 559 | 3,755 | 5,007 | 2,500 | 250 | 500.7 | 37.6 | 7.6 |
| 13 | 190 | 134 | 155 | 207 | 100 | 10 | 20.7 | 1.6 | 0.4 |
| 13 | 300 | 212 | 380 | 507 | 250 | 25 | 50.7 | 4.0 | 0.8 |
| 13 | 424 | 300 | 755 | 1,007 | 500 | 50 | 100.7 | 7.6 | 1.6 |
| 13 | 600 | 424 | 1,505 | 2,007 | 1,000 | 100 | 200.7 | 15.2 | 3.2 |
| 13 | 949 | 671 | 3,755 | 5,007 | 2,500 | 250 | 500.7 | 37.6 | 7.6 |
| 14 | 221 | 157 | 155 | 207 | 100 | 10 | 20.7 | 1.6 | 0.4 |
| 14 | 350 | 247 | 380 | 507 | 250 | 25 | 50.7 | 4.0 | 0.8 |
| 14 | 495 | 350 | 755 | 1,007 | 500 | 50 | 100.7 | 7.6 | 1.6 |
| 14 | 700 | 495 | 1,505 | 2,007 | 1,000 | 100 | 200.7 | 15.2 | 3.2 |
| 14 | 1,107 | 783 | 3,755 | 5,007 | 2,500 | 250 | 500.7 | 37.6 | 7.6 |
| 15 | 253 | 179 | 155 | 207 | 100 | 10 | 20.7 | 1.6 | 0.4 |
| 15 | 400 | 283 | 380 | 507 | 250 | 25 | 50.7 | 4.0 | 0.8 |
| 15 | 566 | 400 | 755 | 1,007 | 500 | 50 | 100.7 | 7.6 | 1.6 |
| 15 | 800 | 566 | 1,505 | 2,007 | 1,000 | 100 | 200.7 | 15.2 | 3.2 |
| 15 | 1,265 | 894 | 3,755 | 5,007 | 2,500 | 250 | 500.7 | 37.6 | 7.6 |

## Sandcasters

| TL | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew Factor | Canisters Carried | Beam Reduction | USD Rating | Canister (Cr) |
|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 50 | 42 | 10 | 1 | 0.60 | Gn 1, Mx 0.1 | 16 | 1d6x 5 | 1 | 400 |
| 9 | 50 | 42 | 10 | 1 | 0.65 | Gn 1, Mx 0.1 | 18 | 1d6x 5 | 1 | 400 |
| 10 | 50 | 42 | 10 | 1 | 0.70 | Gn 1, Mx 0.1 | 20 | 1d10x 5 | 2 | 600 |
| 11 | 50 | 42 | 10 | 1 | 0.75 | Gn 1, Mx 0.1 | 24 | 1d10x 5 | 2 | 600 |
| 12 | 50 | 42 | 10 | 1 | 0.80 | Gn 1, Mx 0.1 | 30 | 1d10x 5 | 2 | 600 |
| 13 | 50 | 42 | 10 | 1 | 0.85 | Gn 1, Mx 0.1 | 35 | 2d6x 5 | 2 | 800 |
| 14 | 50 | 42 | 10 | 1 | 0.90 | Gn 1, Mx 0.1 | 40 | 2d6x 5 | 2 | 800 |
| 15 | 50 | 42 | 10 | 1 | 1.00 | Gn 1, Mx 0.1 | 50 | 2d10x 5 | 2 | 1,000 |

## Nuclear Dampers (TL 12)

| Range (km) | USD Rating | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew (Gn) | Crew (Mx) |
|---|---|---|---|---|---|---|---|---|
| 30,000 | 1 | 76.2 | 83 | 7.5 | 15 | 2.05 | 1 | 0.16 |
| 60,000 | 2 | 152 | 159 | 15.0 | 30 | 4.10 | 1 | 0.31 |
| 90,000 | 3 | 228 | 235 | 22.5 | 45 | 6.15 | 1 | 0.46 |
| 120,000 | 4 | 304 | 311 | 30.0 | 60 | 8.20 | 1 | 0.61 |
| 150,000 | 5 | 380 | 387 | 37.5 | 75 | 10.25 | 1 | 0.76 |
| 180,000 | 6 | 456 | 463 | 45.0 | 90 | 12.30 | 1 | 0.92 |
| 210,000 | 7 | 532 | 539 | 52.5 | 105 | 14.35 | 1 | 1.07 |
| 240,000 | 8 | 608 | 615 | 60.0 | 120 | 16.40 | 1 | 1.22 |
| 270,000 | 9 | 684 | 691 | 67.5 | 135 | 18.45 | 1 | 1.37 |
| 300,000 | 10 | 760 | 767 | 75.0 | 150 | 20.50 | 1 | 1.52 |

## Nuclear Dampers (TL 14)

| Range (km) | USD Rating | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew (Gn) | Crew (Mx) |
|---|---|---|---|---|---|---|---|---|
| 30,000 | 1 | 60.8 | 67.6 | 6.0 | 6 | 4.08 | 1 | 0.13 |
| 60,000 | 2 | 121 | 128.2 | 12.0 | 12 | 8.16 | 1 | 0.25 |
| 90,000 | 3 | 182 | 188.8 | 18.0 | 18 | 12.24 | 1 | 0.37 |
| 120,000 | 4 | 243 | 249.4 | 24.0 | 24 | 16.32 | 1 | 0.49 |
| 150,000 | 5 | 303 | 310 | 30.0 | 30 | 20.40 | 1 | 0.61 |
| 180,000 | 6 | 364 | 370.6 | 36.0 | 36 | 24.48 | 1 | 0.73 |
| 210,000 | 7 | 424 | 431.2 | 42.0 | 42 | 28.56 | 1 | 0.85 |
| 240,000 | 8 | 485 | 491.8 | 48.0 | 48 | 32.64 | 1 | 0.97 |
| 270,000 | 9 | 546 | 552.4 | 54.0 | 54 | 36.72 | 1 | 1.1 |
| 300,000 | 10 | 606 | 613 | 60.0 | 60 | 40.80 | 1 | 1.22 |

## Basic Controls

| Ship Size | TL9: Computer Linked Power (MW) | TL9: Computer Linked Price (MCr) | TL10-12: Dynamic Linked Power (MW) | TL10-12: Dynamic Linked Price (MCr) | TL13-16 Holographic Linked Power (MW) | TL13-16 Holographic Linked Price (MCr) | Mass (t) | Volume ($m^3$) | Crew (Mx) |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0.005 | 0.010 | 0.010 | 0.015 | 0.010 | 0.020 | 0.014 | 0.140 | 0.0 |
| 20 | 0.010 | 0.020 | 0.020 | 0.030 | 0.020 | 0.040 | 0.028 | 0.280 | 0.0 |
| 30 | 0.015 | 0.030 | 0.030 | 0.045 | 0.030 | 0.060 | 0.042 | 0.420 | 0.0 |
| 40 | 0.020 | 0.040 | 0.040 | 0.060 | 0.040 | 0.080 | 0.056 | 0.560 | 0.0 |
| 50 | 0.025 | 0.050 | 0.050 | 0.075 | 0.050 | 0.100 | 0.070 | 0.700 | 0.0 |
| 60 | 0.030 | 0.060 | 0.060 | 0.090 | 0.060 | 0.120 | 0.084 | 0.840 | 0.0 |
| 70 | 0.035 | 0.070 | 0.070 | 0.105 | 0.070 | 0.140 | 0.098 | 0.980 | 0.0 |
| 80 | 0.040 | 0.080 | 0.080 | 0.120 | 0.080 | 0.160 | 0.112 | 1.120 | 0.0 |
| 90 | 0.045 | 0.090 | 0.090 | 0.135 | 0.090 | 0.180 | 0.126 | 1.260 | 0.0 |
| 100 | 0.050 | 0.100 | 0.100 | 0.150 | 0.100 | 0.200 | 0.140 | 1.400 | 0.0 |
| 200 | 0.100 | 0.200 | 0.200 | 0.300 | 0.200 | 0.400 | 0.280 | 2.800 | 0.0 |
| 300 | 0.150 | 0.300 | 0.300 | 0.450 | 0.300 | 0.600 | 0.420 | 4.200 | 0.0 |
| 400 | 0.200 | 0.400 | 0.400 | 0.600 | 0.400 | 0.800 | 0.560 | 5.600 | 0.0 |
| 500 | 0.250 | 0.500 | 0.500 | 0.750 | 0.500 | 1.000 | 0.700 | 7.000 | 0.0 |
| 600 | 0.300 | 0.600 | 0.600 | 0.900 | 0.600 | 1.200 | 0.840 | 8.400 | 0.0 |
| 700 | 0.350 | 0.700 | 0.700 | 1.050 | 0.700 | 1.400 | 0.980 | 9.800 | 0.0 |
| 800 | 0.400 | 0.800 | 0.800 | 1.200 | 0.800 | 1.600 | 1.120 | 11.200 | 0.0 |
| 900 | 0.450 | 0.900 | 0.900 | 1.350 | 0.900 | 1.800 | 1.260 | 12.600 | 0.0 |
| 1,000 | 0.500 | 1.000 | 1.000 | 1.500 | 1.000 | 2.000 | 1.400 | 14.000 | 0.0 |
| 2,000 | 1.000 | 2.000 | 2.000 | 3.000 | 2.000 | 4.000 | 2.800 | 28.000 | 0.1 |
| 3,000 | 1.500 | 3.000 | 3.000 | 4.500 | 3.000 | 6.000 | 4.200 | 42.000 | 0.1 |
| 4,000 | 2.000 | 4.000 | 4.000 | 6.000 | 4.000 | 8.000 | 5.600 | 56.000 | 0.2 |
| 5,000 | 2.500 | 5.000 | 5.000 | 7.500 | 5.000 | 10.000 | 7.000 | 70.000 | 0.2 |

## Minimal Electronics Packages

| TL | Sensors Active Range | Sensors Passive Range | Min Length | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew (EI) | Crew (Mx) |
|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 0.1 | 0.1 | 5 | 67.2 | 47.6 | 51 | 6.95 | 33.91 | 3.00 | 0.15 |
| 9 | 0.1 | 0.1 | 5 | 34.9 | 31.2 | 19 | 4.01 | 18.11 | 3.00 | 0.09 |
| 10 | 0.1 | 0.1 | 5 | 19.1 | 25.9 | 19 | 36.16 | 18.66 | 3.00 | 0.05 |
| 11 | 0.1 | 0.1 | 5 | 11.2 | 24.6 | 9 | 16.29 | 13.16 | 3.00 | 0.04 |
| 12 | 0.1 | 0.1 | 5 | 8.7 | 26.0 | 6 | 9.43 | 13.11 | 3.00 | 0.03 |
| 13 | 0.1 | 0.1 | 5 | 9.3 | 29.0 | 5 | 9.58 | 16.08 | 3.00 | 0.04 |
| 14 | 0.1 | 0.1 | 5 | 7.5 | 25.4 | 4 | 6.73 | 17.87 | 3.00 | 0.03 |
| 15 | 0.1 | 0.1 | 5 | 6.9 | 22.4 | 4 | 6.88 | 20.86 | 3.00 | 0.03 |

## Standard Civilian Electronics Packages

| TL | Sensors Active Range | Sensors Passive Range | Min Length | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew (EI) | Crew (Mx) |
|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 1 | 2 | 10 | 93.6 | 62.3 | 131 | 10.15 | 48.47 | 4.00 | 0.21 |
| 9 | 1 | 2 | 10 | 48.4 | 38.7 | 71 | 6.15 | 25.57 | 4.00 | 0.11 |
| 10 | 1 | 2 | 5 | 27.3 | 30.1 | 39 | 52.30 | 26.72 | 4.00 | 0.07 |
| 11 | 1 | 2 | 5 | 16.7 | 27.4 | 25 | 27.40 | 18.52 | 4.00 | 0.04 |
| 12 | 1 | 2 | 5 | 10.1 | 24.0 | 18 | 13.36 | 12.02 | 4.00 | 0.03 |
| 13 | 1 | 2 | 5 | 11.2 | 30.0 | 17 | 13.66 | 17.97 | 4.00 | 0.04 |
| 14 | 1 | 2 | 5 | 8.2 | 25.7 | 14 | 8.79 | 18.55 | 4.00 | 0.03 |
| 15 | 1 | 2 | 5 | 8.7 | 28.7 | 14 | 8.64 | 15.53 | 4.00 | 0.04 |

## Advanced Civilian Electronics Packages

| TL | Sensors Active Range | Sensors Passive Range | Min Length | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew (EI) | Crew (Mx) |
|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 2 | 4 | 40 | 175.8 | 131.4 | 1,351 | 21.45 | 117.53 | 4.00 | 0.38 |
| 9 | 2 | 4 | 10 | 99.9 | 78.5 | 711 | 17.30 | 65.13 | 4.00 | 0.23 |
| 10 | 4 | 4 | 20 | 47.3 | 42.9 | 253 | 91.40 | 46.38 | 4.00 | 0.13 |
| 11 | 4 | 4 | 20 | 27.9 | 34.4 | 177 | 51.50 | 29.38 | 4.00 | 0.09 |
| 12 | 4 | 4 | 20 | 15.8 | 27.6 | 138 | 27.95 | 17.48 | 4.00 | 0.05 |
| 13 | 4 | 4 | 20 | 16.2 | 32.8 | 123 | 28.25 | 22.73 | 4.00 | 0.06 |
| 14 | 4 | 4 | 20 | 11.3 | 27.5 | 114 | 20.85 | 21.43 | 4.00 | 0.04 |
| 15 | 4 | 4 | 20 | 11.4 | 30.1 | 108 | 20.70 | 18.13 | 4.00 | 0.04 |

## Exploration/Survey Electronics Package

| TL | Sensors Active Range | Sensors Passive Range | Min Length | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew (EI) | Crew (Mx) |
|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 2 | 4 | 40 | 348.6 | 247.8 | 2,603 | 32.80 | 233.66 | 8.00 | 0.75 |
| 9 | 2 | 4 | 40 | 196.9 | 142.0 | 1,333 | 25.25 | 128.63 | 8.00 | 0.45 |
| 10 | 10 | 4 | 20 | 230.8 | 187.6 | 447 | 273.31 | 142.88 | 9.00 | 0.52 |
| 11 | 10 | 4 | 20 | 177.4 | 185.6 | 521 | 135.86 | 76.63 | 10.00 | 0.40 |
| 12 | 10 | 4 | 20 | 51.6 | 66.4 | 285 | 69.41 | 46.78 | 10.00 | 0.14 |
| 13 | 10 | 4 | 20 | 48.7 | 64.9 | 246 | 69.47 | 46.85 | 11.00 | 0.15 |
| 14 | 10 | 4 | 20 | 29.5 | 47.3 | 184 | 44.12 | 37.70 | 11.00 | 0.11 |
| 15 | 10 | 4 | 20 | 27.9 | 42.1 | 174 | 44.17 | 41.20 | 11.00 | 0.11 |

## Military Electronics Packages

| TL | Sensors Active Range | Sensors Passive Range | Min Length | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew (EI) | Crew (Mx) |
|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 2 | 4 | – | 571.9 | 433.0 | 2,709 | 53.40 | 455.01 | 11.00 | 0.72 |
| 9 | 2 | 4 | – | 319.9 | 247.0 | 1,436 | 41.70 | 250.46 | 11.00 | 0.46 |
| 10 | 10 | 4 | – | 198.8 | 143.8 | 554 | 413.90 | 248.91 | 11.00 | 0.41 |
| 11 | 10 | 4 | – | 102.0 | 94.8 | 375 | 204.10 | 128.91 | 11.00 | 0.23 |
| 12 | 10 | 4 | – | 55.4 | 37.9 | 288 | 106.80 | 74.91 | 11.00 | 0.13 |
| 13 | 10 | 4 | – | 53.6 | 76.9 | 258 | 107.10 | 77.91 | 11.00 | 0.14 |
| 14 | 10 | 4 | – | 34.2 | 61.2 | 235 | 69.80 | 60.71 | 11.00 | 0.10 |
| 15 | 10 | 4 | – | 31.3 | 53.8 | 223 | 70.10 | 65.51 | 11.00 | 0.10 |

## Stealth

| Ship Size | Mass (t) | Volume ($m^3$) | Price (MCr) | Crew (Mx) |
|---|---|---|---|---|
| 10 | 1 | 5 | 0.5 | 0.01 |
| 20 | 2 | 10 | 1.0 | 0.01 |
| 30 | 3 | 15 | 1.5 | 0.01 |
| 40 | 4 | 20 | 2.0 | 0.01 |
| 50 | 5 | 25 | 2.5 | 0.01 |
| 60 | 6 | 30 | 3.0 | 0.02 |
| 70 | 7 | 35 | 3.5 | 0.02 |
| 80 | 8 | 40 | 4.0 | 0.02 |
| 90 | 9 | 45 | 4.5 | 0.02 |
| 100 | 10 | 50 | 5.0 | 0.02 |
| 200 | 20 | 100 | 10.0 | 0.04 |
| 300 | 30 | 150 | 15.0 | 0.06 |
| 400 | 40 | 200 | 20.0 | 0.08 |
| 500 | 50 | 250 | 25.0 | 0.10 |
| 600 | 60 | 300 | 30.0 | 0.12 |
| 700 | 70 | 350 | 35.0 | 0.14 |
| 800 | 80 | 400 | 40.0 | 0.16 |
| 900 | 90 | 450 | 45.0 | 0.18 |
| 1,000 | 100 | 500 | 50.0 | 0.20 |
| 2,000 | 200 | 1,000 | 100.0 | 0.40 |
| 3,000 | 300 | 1,500 | 150.0 | 0.60 |
| 4,000 | 400 | 2,000 | 200.0 | 0.80 |
| 5,000 | 500 | 2,500 | 250.0 | 1.00 |

## Electromagnetic Masking (EMM)

| Ship Size | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) | Crew (Mx) |
|---|---|---|---|---|---|---|
| 10 | 1.4 | 2.8 | 1.4 | 0.14 | 0.7 | 0.0 |
| 20 | 2.8 | 5.6 | 2.8 | 0.28 | 1.4 | 0.1 |
| 30 | 4.2 | 8.4 | 4.2 | 0.42 | 2.1 | 0.1 |
| 40 | 5.6 | 11.2 | 5.6 | 0.56 | 2.8 | 0.1 |
| 50 | 7.0 | 14.0 | 7.0 | 0.70 | 3.5 | 0.1 |
| 60 | 8.4 | 16.8 | 8.4 | 0.84 | 4.2 | 0.1 |
| 70 | 9.8 | 19.6 | 9.8 | 0.98 | 4.9 | 0.1 |
| 80 | 11.2 | 22.4 | 11.2 | 1.12 | 5.6 | 0.1 |
| 90 | 12.6 | 25.2 | 12.6 | 1.26 | 6.3 | 0.1 |
| 100 | 14.0 | 28.0 | 14.0 | 1.40 | 7.0 | 0.1 |
| 200 | 28.0 | 56.0 | 28.0 | 2.80 | 14.0 | 0.1 |
| 300 | 42.0 | 84.0 | 42.0 | 4.20 | 21.0 | 0.1 |
| 400 | 56.0 | 112.0 | 56.0 | 5.60 | 28.0 | 0.2 |
| 500 | 70.0 | 140.0 | 70.0 | 7.00 | 35.0 | 0.2 |
| 600 | 84.0 | 168.0 | 84.0 | 8.40 | 42.0 | 0.2 |
| 700 | 98.0 | 196.0 | 98.0 | 9.80 | 49.0 | 0.2 |
| 800 | 112.0 | 224.0 | 112.0 | 11.20 | 56.0 | 0.3 |
| 900 | 126.0 | 252.0 | 126.0 | 12.60 | 63.0 | 0.3 |
| 1,000 | 140.0 | 280.0 | 140.0 | 14.00 | 70.0 | 0.3 |
| 2,000 | 280.0 | 560.0 | 280.0 | 28.00 | 140.0 | 0.6 |
| 3,000 | 420.0 | 840.0 | 420.0 | 42.00 | 210.0 | 0.9 |
| 4,000 | 560.0 | 1,120.0 | 560.0 | 56.00 | 280.0 | 1.2 |
| 5,000 | 700.0 | 1,400.0 | 700.0 | 70.00 | 350.0 | 1.4 |

## Basic Life Support

| Size ($T_d$) | Mass (t) | Volume ($m^3$) | Price (MW) | Crew (MCr) |
|---|---|---|---|---|
| 10 | 0.05 | 0.05 | 0.001 | 0.003 |
| 20 | 0.10 | 0.10 | 0.002 | 0.006 |
| 30 | 0.15 | 0.15 | 0.003 | 0.009 |
| 40 | 0.20 | 0.20 | 0.004 | 0.012 |
| 50 | 0.25 | 0.25 | 0.005 | 0.015 |
| 60 | 0.30 | 0.30 | 0.006 | 0.018 |
| 70 | 0.35 | 0.35 | 0.007 | 0.021 |
| 80 | 0.40 | 0.40 | 0.008 | 0.024 |
| 90 | 0.45 | 0.45 | 0.009 | 0.027 |
| 100 | 0.50 | 0.50 | 0.010 | 0.030 |
| 200 | 1.00 | 1.00 | 0.020 | 0.060 |
| 300 | 1.50 | 1.50 | 0.030 | 0.090 |
| 400 | 2.00 | 2.00 | 0.040 | 0.120 |
| 500 | 2.50 | 2.50 | 0.050 | 0.150 |
| 600 | 3.00 | 3.00 | 0.060 | 0.180 |
| 700 | 3.50 | 3.50 | 0.070 | 0.210 |
| 800 | 4.00 | 4.00 | 0.080 | 0.240 |
| 900 | 4.50 | 4.50 | 0.090 | 0.270 |
| 1,000 | 5.00 | 5.00 | 0.100 | 0.300 |
| 2,000 | 10.00 | 10.00 | 0.200 | 0.600 |
| 3,000 | 15.00 | 15.00 | 0.300 | 0.900 |
| 4,000 | 20.00 | 20.00 | 0.400 | 1.200 |
| 5,000 | 25.00 | 25.00 | 0.500 | 1.500 |

## Standard Life Support

| Size ($T_d$) | Mass (t) | Volume ($m^3$) | Price (MW) | Crew (MCr) |
|---|---|---|---|---|
| 10 | 0.08 | 0.08 | 0.002 | 0.005 |
| 20 | 0.16 | 0.16 | 0.004 | 0.010 |
| 30 | 0.24 | 0.24 | 0.006 | 0.015 |
| 40 | 0.32 | 0.32 | 0.008 | 0.020 |
| 50 | 0.40 | 0.40 | 0.010 | 0.025 |
| 60 | 0.48 | 0.48 | 0.012 | 0.030 |
| 70 | 0.56 | 0.56 | 0.014 | 0.035 |
| 80 | 0.64 | 0.64 | 0.016 | 0.040 |
| 90 | 0.72 | 0.72 | 0.018 | 0.045 |
| 100 | 0.80 | 0.80 | 0.020 | 0.050 |
| 200 | 1.60 | 1.60 | 0.040 | 0.100 |
| 300 | 2.40 | 2.40 | 0.060 | 0.150 |
| 400 | 3.20 | 3.20 | 0.080 | 0.200 |
| 500 | 4.00 | 4.00 | 0.100 | 0.250 |
| 600 | 4.80 | 4.80 | 0.120 | 0.300 |
| 700 | 5.60 | 5.60 | 0.140 | 0.350 |
| 800 | 6.40 | 6.40 | 0.160 | 0.400 |
| 900 | 7.20 | 7.20 | 0.180 | 0.450 |
| 1,000 | 8.00 | 8.00 | 0.200 | 0.500 |
| 2,000 | 16.00 | 16.00 | 0.400 | 1.000 |
| 3,000 | 24.00 | 24.00 | 0.600 | 1.500 |
| 4,000 | 32.00 | 32.00 | 0.800 | 2.000 |
| 5,000 | 40.00 | 40.00 | 1.000 | 2.500 |

## G-Tanks (TL 8-9)

| Description | Mass (t) | Volume ($m^3$) | Price (MCr) |
|---|---|---|---|
| G-Tanks (passenger) | 2 | 2 | 0.01 |
| G-Tanks (crew) | 2 | 2 | 1 |

Note that the difference between passenger and crew tanks (other than the price) is the special fittings and controls in the crew tanks that allow the crewmember to continue to perform duties.

## Maximum Gs Compensated

| TL | Compensated Gs | Max Accel out of/ in workstation | Max Evade out of/ in workstation |
|---|---|---|---|
| 10 | 1G | 2G/3G | 1G/2G |
| 11 | 2G | 3G/4G | 2G/3G |
| 12 | 3G | 4G/5G | 3G/4G |
| 13 | 4G | 5G/6G | 4G/5G |
| 14 | 5G | 6G/7G | 5G/6G |
| 15 | 6G | 7G/8G | 6G/7G |

## Artificial Gravity / Inertial Compensators

| Ship Size | Mass (t) | Volume ($m^3$) | Power (MW) | Price (MCr) | Crew (Mx) |
|---|---|---|---|---|---|
| 10 | 2.8 | 1.4 | 1 | 0.07 | 0.01 |
| 20 | 5.6 | 2.8 | 1 | 0.14 | 0.02 |
| 30 | 8.4 | 4.2 | 2 | 0.21 | 0.02 |
| 40 | 11.2 | 5.6 | 3 | 0.28 | 0.03 |
| 50 | 14.0 | 7.0 | 4 | 0.35 | 0.03 |
| 60 | 16.8 | 8.4 | 4 | 0.42 | 0.04 |
| 70 | 19.6 | 9.8 | 5 | 0.49 | 0.04 |
| 80 | 22.4 | 11.2 | 6 | 0.56 | 0.05 |
| 90 | 25.2 | 12.6 | 6 | 0.63 | 0.05 |
| 100 | 28.0 | 14.0 | 7 | 0.70 | 0.06 |
| 200 | 56.0 | 28.0 | 14 | 1.40 | 0.12 |
| 300 | 84.0 | 42.0 | 21 | 2.10 | 0.17 |
| 400 | 112.0 | 56.0 | 28 | 2.80 | 0.23 |
| 500 | 140.0 | 70.0 | 35 | 3.50 | 0.28 |
| 600 | 168.0 | 84.0 | 42 | 4.20 | 0.34 |
| 700 | 196.0 | 98.0 | 49 | 4.90 | 0.40 |
| 800 | 224.0 | 112.0 | 56 | 5.60 | 0.45 |
| 900 | 252.0 | 126.0 | 63 | 6.30 | 0.51 |
| 1,000 | 280.0 | 140.0 | 70 | 7.00 | 0.56 |
| 2,000 | 560.0 | 280.0 | 140 | 14.00 | 1.12 |
| 3,000 | 840.0 | 420.0 | 210 | 21.00 | 1.68 |
| 4,000 | 1,120.0 | 560.0 | 280 | 28.00 | 2.24 |
| 5,000 | 1,400.0 | 700.0 | 350 | 35.00 | 2.80 |

## Labs and Shops

| Description | Volume ($m^3$) | Mass (t) | Price (MCr) | Power (MW) |
|---|---|---|---|---|
| Electronics Shop | 84 | 40 | 1 | 0.6 |
| Machine Shop | 140 | 120 | 2 | 1 |
| Laboratory | 112 | 50 | 5 | 0.8 |
| Sick Bay | 112 | 50 | 5 | 0.8 |

## Docking Rings

| Small Craft Displacement | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Price (MCr) |
|---|---|---|---|---|
| 10 | 0 | 140 | 49 | 0.11 |
| 20 | 0 | 280 | 64 | 0.18 |
| 30 | 0 | 420 | 85 | 0.26 |
| 40 | 0 | 560 | 109 | 0.34 |
| 50 | 0 | 700 | 126 | 0.41 |
| 60 | 0 | 840 | 135 | 0.47 |
| 70 | 0 | 980 | 157 | 0.55 |
| 80 | 0 | 1,120 | 175 | 0.63 |
| 90 | 0 | 1,260 | 185 | 0.69 |

## Internal Hangar (Minimal)

| Small Craft Displacement | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Price (MCr) |
|---|---|---|---|---|
| 10 | 56 | 280 | 49 | 0.11 |
| 20 | 112 | 560 | 64 | 0.18 |
| 30 | 168 | 840 | 85 | 0.26 |
| 40 | 224 | 1,120 | 109 | 0.34 |
| 50 | 280 | 1,400 | 126 | 0.41 |
| 60 | 336 | 1,680 | 135 | 0.47 |
| 70 | 392 | 1,960 | 157 | 0.55 |
| 80 | 448 | 2,240 | 175 | 0.63 |

## Internal Hangar (Spacious)

| Small Craft Displacement | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Price (MCr) |
|---|---|---|---|---|
| 10 | 112 | 560 | 49 | 0.16 |
| 20 | 224 | 1,120 | 64 | 0.29 |
| 30 | 336 | 1,680 | 85 | 0.42 |
| 40 | 448 | 2,240 | 109 | 0.56 |
| 50 | 560 | 2,800 | 126 | 0.69 |
| 60 | 672 | 3,360 | 135 | 0.81 |
| 70 | 784 | 3,920 | 157 | 0.94 |
| 80 | 896 | 4,480 | 175 | 1.07 |
| 90 | 1,008 | 5,040 | 185 | 1.20 |

## Launch Tubes

| Small Craft Displacement | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Power (MW) | Price (MCr) |
|---|---|---|---|---|---|
| 10 | 1,750 | 3,500 | 98 | 35 | 0.53 |
| 20 | 3,500 | 7,000 | 128 | 70 | 1.05 |
| 30 | 5,250 | 10,500 | 170 | 105 | 1.58 |
| 40 | 7,000 | 14,000 | 217 | 140 | 2.10 |
| 50 | 8,750 | 17,500 | 251 | 175 | 2.63 |
| 60 | 10,500 | 21,000 | 270 | 210 | 3.15 |
| 70 | 12,250 | 24,500 | 313 | 245 | 3.68 |
| 80 | 14,000 | 28,000 | 349 | 280 | 4.20 |
| 90 | 15,750 | 31,500 | 370 | 315 | 4.73 |

## Cargo Hatches

| Hatch | Area ($m^2$) | Price (MCr) |
|---|---|---|
| Small Cargo Hatch | 12 | 0.012 |
| Large Cargo Hatch | 20 | 0.02 |

## Fuel Purification Plants

| TL | Capacity ($m^3$ / 6 hrs) | Mass (t) | Volume ($m^3$) | Power (MW) | Price (MCr) |
|---|---|---|---|---|---|
| 8 | 700 | 1,050 | 490 | 7.0 | 0.140 |
| 8 | 1,400 | 2,100 | 980 | 14.0 | 0.280 |
| 8 | 2,800 | 4,200 | 1,960 | 28.0 | 0.560 |
| 9 | 700 | 840 | 420 | 6.3 | 0.13 |
| 9 | 1,400 | 1,680 | 840 | 12.6 | 0.266 |
| 9 | 2,800 | 3,360 | 1,680 | 25.2 | 0.532 |
| 10 | 700 | 770 | 385 | 5.6 | 0.126 |
| 10 | 1,400 | 1,540 | 770 | 11.2 | 0.252 |
| 10 | 2,800 | 3,080 | 1,540 | 22.4 | 0.504 |
| 11 | 700 | 630 | 315 | 4.9 | 0.119 |
| 11 | 1,400 | 1,260 | 630 | 9.8 | 0.238 |
| 11 | 2,800 | 2,520 | 1,260 | 19.6 | 0.476 |
| 12 | 700 | 560 | 280 | 4.2 | 0.112 |
| 12 | 1,400 | 1,120 | 560 | 8.4 | 0.224 |
| 12 | 2,800 | 2,240 | 1,120 | 16.8 | 0.448 |
| 13 | 700 | 490 | 245 | 3.5 | 0.105 |
| 13 | 1,400 | 980 | 490 | 7.0 | 0.210 |
| 13 | 2,800 | 1,960 | 980 | 14.0 | 0.420 |
| 14 | 700 | 350 | 175 | 3.5 | 0.098 |
| 14 | 1,400 | 700 | 350 | 7.0 | 0.196 |
| 14 | 2,800 | 1,400 | 700 | 14.0 | 0.392 |
| 15 | 700 | 280 | 140 | 3.5 | 0.105 |
| 15 | 1,400 | 560 | 280 | 7.0 | 0.210 |
| 15 | 2,800 | 1,120 | 560 | 14.0 | 0.420 |

## Fission Plants (TL 8)

| Power (MW) | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Price (MCr) | Crew (En) | Crew (Mx) | Fuel ($m^3$/yr) |
|---|---|---|---|---|---|---|---|
| 5 | na | na | na | na | na | na | na |
| 10 | 60.0 | 10.0 | 10 | 1.00 | 0.40 | 0.12 | 1.00 |
| 25 | 150.0 | 25.0 | 25 | 2.50 | 0.90 | 0.30 | 2.50 |
| 50 | 300.0 | 50.0 | 50 | 5.00 | 1.70 | 0.60 | 5.00 |
| 75 | 450.0 | 75.0 | 75 | 7.50 | 2.50 | 0.90 | 7.50 |
| 100 | 600.0 | 100.0 | 100 | 10.00 | 3.40 | 1.20 | 10.0 |
| 250 | 1,500.0 | 250.0 | 250 | 25.00 | 8.40 | 3.00 | 25.00 |
| 500 | 3,000.0 | 500.0 | 500 | 50.00 | 16.70 | 6.00 | 50.00 |
| 1,000 | 6,000.0 | 1,000.0 | 1,000 | 100.00 | 33.40 | 12.00 | 100.00 |
| 2,500 | 15,000.0 | 2,500.0 | 2,500 | 250.00 | 83.40 | 30.00 | 250.00 |
| 5,000 | 30,000.0 | 5,000.0 | 5,000 | 500.00 | 166.70 | 60.00 | 500.00 |

## Fusion Plants (TL 9)

| Power (MW) | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Price (MCr) | Crew (En) | Crew (Mx) | Fuel ($m^3$/yr) |
|---|---|---|---|---|---|---|---|
| 5 | na | na | na | na | na | na | na |
| 10 | na | na | na | na | na | na | na |
| 25 | na | na | na | na | na | na | na |
| 50 | na | na | na | na | na | na | na |
| 75 | na | na | na | na | na | na | n |
| 100 | na | na | na | na | na | na | na |
| 250 | na | na | na | na | na | na | na |
| 500 | na | na | na | na | na | na | na |
| 1,000 | na | na | na | na | na | na | na |
| 2,500 | 5,000.0 | 1,250.0 | 2,500 | 250.00 | 83.40 | 10.00 | 375.00 |
| 5,000 | 10,000.0 | 2,500.0 | 5,000 | 500.00 | 166.70 | 20.00 | 750.00 |

## Fusion Plants (TL 10)

| Power (MW) | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Price (MCr) | Crew (En) | Crew (Mx) | Fuel ($m^3$/yr) |
|---|---|---|---|---|---|---|---|
| 5 | na | na | na | na | na | na | na |
| 10 | na | na | na | na | na | na | na |
| 25 | na | na | na | na | na | na | na |
| 50 | na | na | na | na | na | na | na |
| 75 | na | na | na | na | na | na | na |
| 100 | na | na | na | na | na | na | na |
| 250 | na | na | na | na | na | na | na |
| 500 | na | na | na | na | na | na | na |
| 1,000 | 2,000.0 | 500.0 | 1,000 | 100.00 | 33.40 | 4.00 | 150.00 |
| 2,500 | 5,000.0 | 1,250.0 | 2,500 | 250.00 | 83.40 | 10.00 | 375.00 |
| 5,000 | 10,000.0 | 2,500.0 | 5,000 | 500.00 | 166.70 | 20.00 | 750.00 |

## Fusion Plants (TL11)

| Power (MW) | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Price (MCr) | Crew (En) | Crew (Mx) | Fuel ($m^3$/yr) |
|---|---|---|---|---|---|---|---|
| 5 | na | na | na | na | na | na | na |
| 10 | na | na | na | na | na | na | na |
| 25 | na | na | na | na | na | na | na |
| 50 | na | na | na | na | na | na | na |
| 75 | na | na | na | na | na | na | na |
| 100 | na | na | na | na | na | na | na |
| 250 | na | na | na | na | na | na | na |
| 500 | 1,000.0 | 250.0 | 500 | 50.00 | 16.70 | 2.00 | 75.00 |
| 1,000 | 2,000.0 | 500.0 | 1,000 | 100.00 | 33.40 | 4.00 | 150.00 |
| 2,500 | 5,000.0 | 1,250.0 | 2,500 | 250.00 | 83.40 | 10.00 | 375.00 |
| 5,000 | 10,000.0 | 2,500.0 | 5,000 | 500.00 | 166.70 | 20.00 | 750.00 |

## Fusion Plants (TL 12)

| Power (MW) | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Price (MCr) | Crew (En) | Crew (Mx) | Fuel ($m^3$/yr) |
|---|---|---|---|---|---|---|---|
| 5 | na | na | na | na | na | na | na |
| 10 | na | na | na | na | na | na | na |
| 25 | 50.0 | 12.5 | 25 | 2.50 | 0.90 | 0.10 | 3.75 |
| 50 | 100.0 | 25.0 | 50 | 5.00 | 1.70 | 0.20 | 7.50 |
| 75 | 150.0 | 37.5 | 75 | 7.50 | 2.50 | 0.30 | 11.25 |
| 100 | 200.0 | 50.0 | 100 | 10.00 | 3.40 | 0.40 | 15.00 |
| 250 | 500.0 | 125.0 | 250 | 25.00 | 8.40 | 1.00 | 37.50 |
| 500 | 1,000.0 | 250.0 | 500 | 50.00 | 16.70 | 2.00 | 75.00 |
| 1,000 | 2,000.0 | 500.0 | 1,000 | 100.00 | 33.40 | 4.00 | 150.00 |
| 2,500 | 5,000.0 | 1,250.0 | 2,500 | 250.00 | 83.40 | 10.00 | 375.00 |
| 5,000 | 10,000.0 | 2,500.0 | 5,000 | 500.00 | 166.70 | 20.00 | 750.00 |

## Fusion Plants (TL 13-14)

| Power (MW) | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Price (MCr) | Crew (En) | Crew (Mx) | Fuel ($m^3$/yr) |
|---|---|---|---|---|---|---|---|
| 5 | 5.0 | 1.7 | 5 | 0.33 | 0.20 | 0.01 | 0.50 |
| 10 | 10.0 | 3.3 | 10 | 0.67 | 0.40 | 0.02 | 1.00 |
| 25 | 25.0 | 8.3 | 25 | 1.67 | 0.90 | 0.05 | 2.50 |
| 50 | 50.0 | 16.7 | 50 | 3.33 | 1.70 | 0.10 | 5.00 |
| 75 | 75.0 | 25.0 | 75 | 5.00 | 2.50 | 0.15 | 7.50 |
| 100 | 100.0 | 33.3 | 100 | 6.67 | 3.40 | 0.20 | 10.00 |
| 250 | 250.0 | 83.3 | 250 | 16.67 | 8.40 | 0.50 | 25.00 |
| 500 | 500.0 | 166.7 | 500 | 33.33 | 16.70 | 1.00 | 50.00 |
| 1,000 | 1,000.0 | 333.3 | 1,000 | 66.67 | 33.40 | 2.00 | 100.00 |
| 2,500 | 2,500.0 | 833.3 | 2,500 | 166.67 | 83.40 | 5.00 | 250.00 |
| 5,000 | 5,000.0 | 1,666.7 | 5,000 | 333.33 | 166.70 | 10.00 | 500.00 |

## Fusion Plants (TL 15)

| Power (MW) | Mass (t) | Volume ($m^3$) | Area ($m^2$) | Price (MCr) | Crew (En) | Crew (Mx) | Fuel ($m^3$/yr) |
|---|---|---|---|---|---|---|---|
| 5 | 1.7 | 0.8 | 5 | 0.17 | 0.20 | 0.01 | 0.50 |
| 10 | 3.3 | 1.7 | 10 | 0.33 | 0.40 | 0.01 | 1.00 |
| 25 | 8.3 | 4.2 | 25 | 0.83 | 0.90 | 0.02 | 2.50 |
| 50 | 16.7 | 8.3 | 50 | 1.67 | 1.70 | 0.04 | 5.00 |
| 75 | 25.0 | 12.5 | 75 | 2.50 | 2.50 | 0.05 | 7.50 |
| 100 | 33.3 | 16.7 | 100 | 3.33 | 3.40 | 0.07 | 10.00 |
| 250 | 83.3 | 41.7 | 250 | 8.33 | 8.40 | 0.17 | 25.00 |
| 500 | 166.7 | 83.3 | 500 | 16.67 | 16.70 | 0.34 | 50.00 |
| 1,000 | 333.3 | 166.7 | 1,000 | 33.33 | 33.40 | 0.67 | 100.00 |
| 2,500 | 833.3 | 416.7 | 2,500 | 83.33 | 83.40 | 1.67 | 250.00 |
| 5,000 | 1,666.7 | 833.3 | 5,000 | 166.67 | 166.70 | 3.34 | 500.00 |

## Fuel Cells (TL 12)

| Output (MW) | Mass (t) | Volume ($m^3$) | Price (MCr) | Crew (En) | Crew (Mx) | Fuel ($m^3$/hr) |
|---|---|---|---|---|---|---|
| 5 | 6.7 | 6.7 | 0.13 | 0.20 | 0.02 | 1.25 |
| 10 | 13.3 | 13.3 | 0.27 | 0.40 | 0.03 | 2.50 |
| 25 | 33.3 | 33.3 | 0.67 | 0.90 | 0.07 | 6.25 |
| 50 | 66.7 | 66.7 | 1.33 | 1.70 | 0.14 | 12.50 |
| 75 | 100.0 | 100.0 | 2.00 | 2.50 | 0.20 | 18.75 |
| 100 | 133.3 | 133.3 | 2.67 | 3.40 | 0.27 | 25.00 |
| 250 | 333.3 | 333.3 | 6.67 | 8.40 | 0.67 | 62.50 |
| 500 | 666.7 | 666.7 | 13.33 | 16.70 | 1.34 | 125.00 |
| 1,000 | 1,333.3 | 1,333.3 | 26.67 | 33.40 | 2.67 | 250.00 |
| 2,500 | 3,333.3 | 3,333.3 | 66.67 | 83.40 | 6.67 | 625.00 |
| 5,000 | 6,666.7 | 6,666.7 | 133.33 | 166.70 | 13.34 | 1,250.00 |

## Fuel Cells (TL 14)

| Output (MW) | Mass (t) | Volume ($m^3$) | Price (MCr) | Crew (En) | Crew (Mx) | Fuel ($m^3$/hr) |
|---|---|---|---|---|---|---|
| 5 | 3.3 | 3.3 | 0.07 | 0.20 | 0.01 | 0.10 |
| 10 | 6.7 | 6.7 | 0.13 | 0.40 | 0.02 | 0.20 |
| 25 | 16.7 | 16.7 | 0.33 | 0.90 | 0.04 | 0.50 |
| 50 | 33.3 | 33.3 | 0.67 | 1.70 | 0.07 | 1.00 |
| 75 | 50.0 | 50.0 | 1.00 | 2.50 | 0.10 | 1.5 |
| 100 | 66.7 | 66.7 | 1.33 | 3.40 | 0.14 | 2.00 |
| 250 | 166.7 | 166.7 | 3.33 | 8.40 | 0.34 | 5.00 |
| 500 | 333.3 | 333.3 | 6.67 | 16.70 | 0.67 | 10.00 |
| 1,000 | 666.7 | 666.7 | 13.33 | 33.40 | 1.34 | 20.00 |
| 2,500 | 1,666.7 | 1,666.7 | 33.33 | 83.40 | 3.34 | 50.00 |
| 5,000 | 3,333.3 | 3,333.3 | 66.67 | 166.70 | 6.67 | 100.00 |

## Control Modifier

| TL | Modifier |
|---|---|
| 8 | 0.60 |
| 9 | 0.50 |
| 10 | 0.45 |
| 11 | 0.40 |
| 12 | 0.35 |
| 13 | 0.30 |
| 14 | 0.25 |
| 15 | 0.20 |

## Workstations

| TL | Bridge W/S Volume ($m^3$) | Regular W/S Volume ($m^3$) | Mass (t) | Price (MCr) |
|---|---|---|---|---|
| 8 | 14 | 7 | 0.2 | 0.00075 |
| 9 | 14 | 7 | 0.2 | 0.00100 |
| 10-12 | 14 | 7 | 0.2 | 0.00150 |
| 13-16 | 14 | 7 | 0.2 | 0.00200 |

## Accommodations

| Description | Volume ($m^3$) | Mass (t) | Power (MW) | Price (MCr) |
|---|---|---|---|---|
| Bunk | 14 | 0.5 | — | 0.005 |
| Low Berth | 14 | 1.0 | 0.0010 | 0.050 |
| Emergency Low Berth (holds 4) | 28 | 2.0 | 0.0020 | 0.100 |
| Small Stateroom | 28 | 2.0 | 0.0005 | 0.040 |
| Large Stateroom | 56 | 4.0 | 0.0010 | 0.100 |

## Hull Size

| Hull | USD Size |
|---|---|
| < 1 | 5 |
| 1+ | 6 |
| 10+ | 7 |
| 100+ | 8 |
| 1000+ | 9 |
| 10000+ | 10 |
| 100000+ | 11 |
| 1000000+ | 12 |

## Fire Control

| TL | Rating |
|---|---|
| 9 | 2 |
| 10 | 3 |
| 11 | 3 |
| 12 | 4 |
| 13 | 4 |
| 14 | 5 |

## USP Conversion Chart

| Actual Value | USP Rating |
|---|---|
| 1+ | 0 |
| 20+ | 1 |
| 40+ | 2 |
| 80+ | 3 |
| 120+ | 4 |
| 160+ | 5 |
| 200+ | 6 |
| 250+ | 7 |
| 300+ | 8 |
| 400+ | 9 |
| 500+ | 10 |
| 750+ | 11 |
| 1,000+ | 12 |
| 1,250+ | 13 |
| 1,500+ | 14 |
| 1,750+ | 15 |
| 2,000+ | 16 |
| 2,500+ | 17 |
| 3,000+ | 18 |
| 3,500+ | 19 |
| 4,000+ | 20 |
| 4,500+ | 21 |
| 5,000+ | 22 |
| 6,000+ | 23 |
| 7,000+ | 24 |
| 8,000+ | 25 |
| 9,000+ | 26 |
| 10,000+ | 27 |
| 11,000+ | 28 |
| 13,000+ | 29 |
| 15,000+ | 30 |
| 17,000+ | 31 |
| 19,000+ | 32 |
| 21,000+ | 33 |
| 23,000+ | 34 |
| 27,000+ | 35 |
| 31,000+ | 36 |
| 35,000+ | 37 |
| 39,000+ | 38 |
| 43,000+ | 39 |
| 47,000+ | 40 |
| 55,000+ | 41 |
| 63,000+ | 42 |
| 71,000+ | 43 |
| 79,000+ | 44 |
| 87,000+ | 45 |
| 95,000+ | 46 |
| 111,000+ | 47 |
| 127,000+ | 48 |
| 143,000+ | 49 |
| 159,000+ | 50 |
| 175,000+ | 51 |
| 191,000+ | 52 |
| 223,000+ | 53 |
| 255,000+ | 54 |
| 287,000+ | 55 |
| 319,000+ | 56 |
| 351,000+ | 57 |
| 383,000+ | 58 |
| 447,000+ | 59 |

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