



ARMADA CODEX

TM



SCARAB

BULK HAULER

Ryan Wolfe

01:04

SCARAB & KIBOKO

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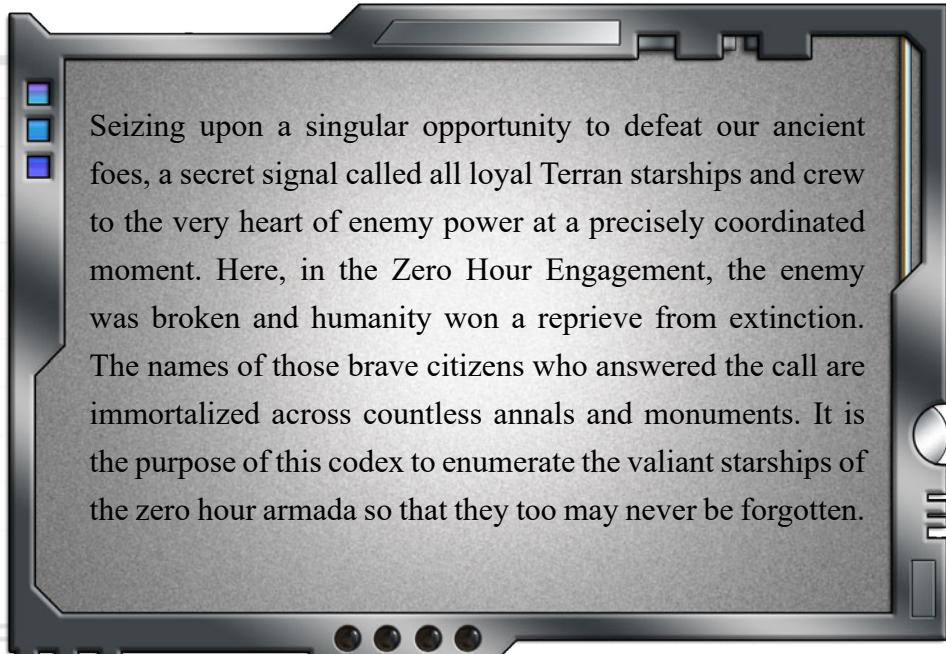
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Seizing upon a singular opportunity to defeat our ancient foes, a secret signal called all loyal Terran starships and crew to the very heart of enemy power at a precisely coordinated moment. Here, in the Zero Hour Engagement, the enemy was broken and humanity won a reprieve from extinction. The names of those brave citizens who answered the call are immortalized across countless annals and monuments. It is the purpose of this codex to enumerate the valiant starships of the zero hour armada so that they too may never be forgotten.

0 hr: Scarab

by Ryan Wolfe of *0 hr: art & technology*

0-hr.com

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Overview

The Scarab-class freighter is named for the squat, sturdy shape of its hull and its rugged endurance. It is just a coincidence that the original scarab is a species of “dung beetle” and this class of ship is often employed moving garbage and other unseemly cargos. The extended-hull version of the ship is known as the Kiboko-class, which is a Swahili word for hippo (a reference to its bulk and ungainly nature outside of the void).

Both are cheap and dependable, though lacking in amenities. Each is designed to haul large quantities of cargo, whether it be crated or loose (like trash and ore). The main holds are also equipped to haul liquids and pressurized gases – though this makes accessing some parts of the ship inconvenient or impossible. As a nod towards self-defense, a single gun is mounted on the dorsal side of the ship as standard equipment. Though it can rotate through 360 degrees, it is not a turret. Instead it is controlled from the bridge and typically doesn’t pack enough fire power to be a real deterrent. In the end, the Scarab’s reputation for hauling only the cheapest and most inconvenient of loads provides better protection from piracy.



Both Scarabs and Kiboko are common in the more populated systems of human space. They are not much respected by ambitious independent pilots or status-conscious smugglers, but are very popular with companies and agencies that need a large number of cheap haulers. As such, more often than not these ships will be seen painted in the livery of some company or other – and often in a small convoy of similar vessels travelling the space lanes.

A handful of these ships participated in the Zero Hour Engagement. The *Kephri* and the *Olmakau* (a Scarab and Kiboko-class respectively) in particular distinguished themselves. By shielding the ConFederation cruiser *Aberdeen* during a vital attack run, the durable freighters allowed the warship to reach its objective under heavy fire and inflict massive damage on an Umbral command ship. Their sacrifice gave a well-deserved boost to the reputation of this family of garbage scows and bulk haulers.

In the months following the war, most of these ships went quietly back to plodding through their appointed rounds. Several, however, have recently been acquired by independent owners. This is probably due in part to the shortage of ships following the massive engagement at Tau-Ceti, but may also be because their service in the war added a touch of nobility to their blue-collar character.



SCARAB

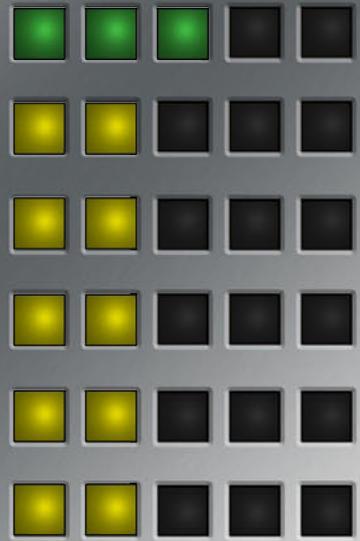
CLASSIFICATION	freight hauler
ORIGIN	ConFederation / Nexan border
REGISTRATION	private or commercial
DIMENSIONS	160 x 117 x 39 ft. (LWH)

REGISTER TONNAGE	5023
CARGO CAPACITY	1600 register tons
STANDARD CREW	9
PASSENGER CAPACITY	0

NOTES

- Outdated components
- No escape pods or life boats
- Hold suitable for any cargo type
- Vehicles carried:
 - 2 Exo-frame cargo movers

TECHNOLOGY LEVEL



RELATIVE COST



F.T.L. SYSTEM



ACCELERATION & MAXIMUM SPEED



MANEUVERABILITY



ATMOSPHERIC PERFORMANCE



DEFAULT ARMAMENT

- 1 rotatable plasma pulse gun

COMMON OPTIONS

- Painted in company colors

DURABILITY



OFFENSIVE CAPABILITY



DEFENSIVE CAPABILITY

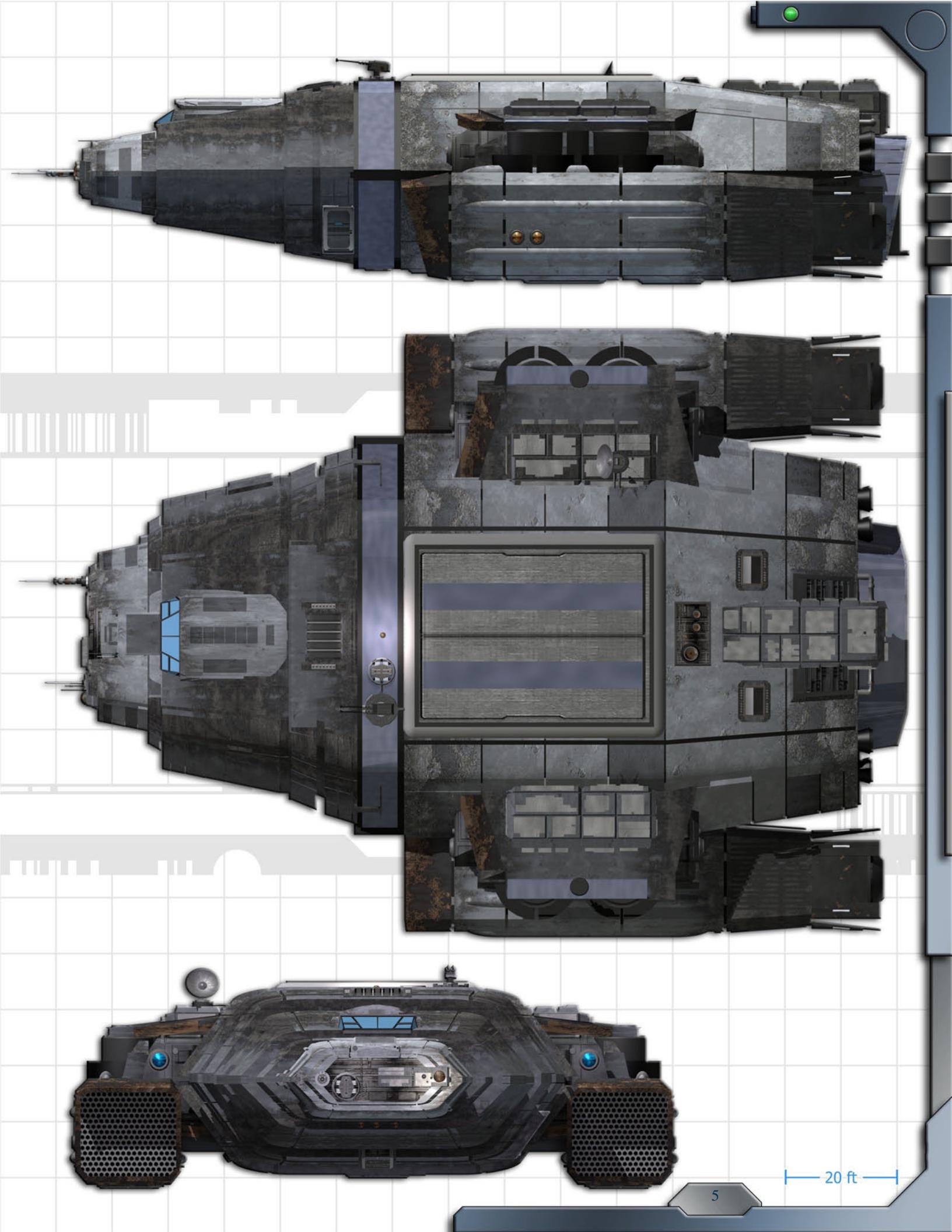


COMPUTER SYSTEM



SENSORS & COMMUNICATIONS







Components

The Scarab and Kiboko designs are produced by Aves Engineering in shipyards over Brahminbaria near the Nexan border. A conglomeration of several large engineering guilds, Aves produces a wide variety of ships and - with its large work force and sprawling orbital facilities – can build a great number of each type of vessel.

Though huge, complex, and efficient, Aves isn't a corporation. Such legal entities are nearly unknown in the Colonies and are forbidden in the ConFederation in the years following Terra Mortis (the “Dead Earth” dark ages brought about by corporate greed and from which humanity is still struggling to emerge). Ownership is shared by many, but so is financial & legal liability. Those with the most stake in the company (and the most to gain or lose) are the former engineering guild masters and their Houses.

For propulsion, a Scarab-class ship relies on a pair of first-generation particle induction engines mounted on nacelles to either side of the main hull. The design was created by the (now defunct) Bishop Aerospace who sold the schematics to both sides in the NEXAN War more than twenty years ago. Used initially in military ships, the engine design has been widely adopted by civilian craft due to the low fuel requirements and high output. The larger, older models, like those used on Scarab are less efficient and so

the ship carries a fair amount of metallic hydrogen to use as fuel and reaction mass. Given time, it is possible for the ship to refuel via electromagnetic scoop in space. Typically, however, the ship will replenish its fuel reserves using a gravitic compressor and liquid hydrogen for sale at port.

As with all engines of this sort, a massive power source is required in order to initiate the particle induction process. The ship relies on a common fusion reactor, positioned on the dorsal side of the ship near the aft end, to provide power to the engines and all of the ship's systems.

Like the engines and power core, the F.T.L. system built into the ship is about a decade behind “state of the art” even on Scarabs and Kiboko just now coming off the assembly line. Using older designs and refurbished parts keeps cost down but doesn't produce a ship worth bragging about.

The same “outdated but serviceable” philosophy carries over to most of the ship's systems. The sensors, communication, navigation, and computer system are all “ok” and nothing more. It's equipment that was standard years ago – not what you would expect to find on ships just coming into service. All those yellow ratings may look bad at first, but they really are “high yellow” - that is, *almost* average. Many components are *just* old enough to warrant the lower rating. On the other



hand, the green (average) rating for overall technology level is a “low green”. These ships are built in modern facilities using the latest processes, but as science continues to advance the older components mean this rating will become yellow a lot sooner than similar ships being built at the same time. On the bright side, there is ample opportunity for upgrades and customization.

The Kiboko is a literal extension of the Scarab design, providing even more cargo space though a third, smaller, engine is required to offset the additional mass. The Kiboko also adds external storage tanks. These are used for additional fuel (for the extra engine) and atmosphere (to cycle the huge cargo hold). Some ships of this class are used as fuel carriers and are equipped with the additional pumps, hoses, and couplings need to perform ship-to-ship refuelling actions in space and on the ground.

The Scarab and Kiboko have similar ratings. They are behind the curve – but still basically acceptable – in all of the propulsion and electronics categories. The only reason offensive capability has any rating at all is because of the single plasma gun mounted atop the hull. There are no defensive measures – not even escape pods or life boats – and so these ships have no rating in this category.

Where the ship gets good marks is in durability. The hull is strong and well reinforced. This is necessary in order to haul dense cargo loads but also means the ship can withstand a lot of punishment. The older systems are also easy to maintain since any problems are well known and spare parts are plentiful. Lastly, the relative cost of these ships is low. That is, after all, the point. Both the Scarab-class and the Kiboko-class are unapologetically designed to get the job done, reliably, for the minimum cost possible.

KIBOKO

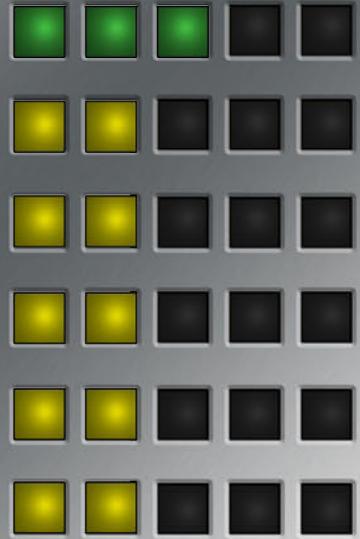
CLASSIFICATION	freight hauler
ORIGIN	ConFederation / Nexan border
REGISTRATION	private or commercial
DIMENSIONS	254 x 116 x 67 ft. (LWH)

REGISTER TONNAGE	7107
CARGO CAPACITY	3200 register tons
STANDARD CREW	9
PASSENGER CAPACITY	0

NOTES

- Outdated components
- No escape pods or life boats
- Hold suitable for any cargo type
- Vehicles carried:
 - 2 Exo-frame cargo movers

TECHNOLOGY LEVEL



RELATIVE COST



F.T.L. SYSTEM



ACCELERATION & MAXIMUM SPEED



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OFFENSIVE CAPABILITY



DEFENSIVE CAPABILITY



COMPUTER SYSTEM



SENSORS & COMMUNICATIONS





Interior Areas

The habitable area within a Scarab hull can be divided into two levels. The upper level, for the most part, isn't technically a deck because it consists of four small areas connected only by a metal mesh balcony encircling the cargo bay.

Upper Deck

1. Cockpit

This area could be called either a large cockpit or a small bridge. It has seats for a pilot and copilot with ample standing room behind. Redundant controls allow for basic communications, sensors, and engineering tasks to be performed from here when needed – though the dedicated stations elsewhere in the ship are more robust for their appointed duties. A crew of two can operate the vessel if necessary but four is the standard shift – two in the cockpit, one assigned to sensors/communications, and one in engineering.

The wrap-around window allows for good visibility forward and somewhat to the sides but is limited otherwise. As with most view ports on modern ships, the window is constructed of the same composite material as the surrounding hull, but fabricated (at considerable expense) so as to be transparent to visible light. Unlike the forward windows on most ships, those on Scarab do not have built in display technology. Consoles and monitors must be used to present additional information or alternate views.

2. Captain's Cabin

There is only a single private cabin on board and so it is typically occupied by the ship owner or captain. The proximity to the bridge makes it a convenient bunk for the pilot and many companies require their commanding officers to be certified pilots as well.

The cabin holds a single bed, a small table and chair, plus a pair of standing lockers for clothes and personal effects. The tiny restroom nearby is shared between this cabin and anyone on duty in the cockpit.

3. Access Area

Not a really vestibule, antechamber, or foyer, this room is known simply as the “access area” as it allows one to go forward to the bridge/cockpit, aft onto the cargo bay balcony, down stairs to the lower level, or up a ladder to the dorsal exterior of the ship.

A quartet of lockers hold vacc suits, tools, and assorted sundries. The stairs lead down to the galley. At the back of the room are two sets of doors. The larger set leads out onto the balcony in the cargo hold. These are, of course, sealed if the ship is transporting liquid or gaseous cargo; or if the hold is being kept in vacuum.

The other set of doors grants access to a vertical tube running through the ship. At either end are hatches which open to the

exterior of the ship (top and bottom). A ladder runs the length of the tube and it is bisected by another hatch set into the floor at this level. Either section of the tube can function as an air lock.

Going down the ladder from here puts one into the section of the tube on the lower level, with the crawlway access immediately below that. Going up, one would emerge onto the hull next to the ship's single gun emplacement.

4. Office

There are a pair of rooms, one above the other, on either side of the massive cargo bay. The upper room on the port (left) side is an open office space. This area is typically used as a place to meet customers and conduct the day to day business of a commercial vessel.

A large desk looks out over the cargo bay; a comfortable couch and coffee station are provided for visitors; and file cabinets are present to store hard copies of paperwork if needed. As this room is built over and partially into the port engine nacelle, there are also engineering diagnostic and control panels to be found along the perimeter of the chamber.

Doors at the front and back of the room lead out onto the cargo hold balcony. A ladder leads down to the garage. Since the couch can fold out into a bed it is not uncommon for the ship's financial officer to bunk here instead of in the crowded barracks. In ships which do not require office space, this chamber is often converted into a rec-room (with weights and exercise equipment) or turned into either one large, or two small, cabins for the owner or passengers.

5. Lounge

The upper room on the starboard side of the cargo hold is set aside as a lounge for off duty crew. With the décor of a planet-side bar, this area has a billiards table, video game console, and self-serve beverage station. A small kitchenette and microwave allow for a limited selection of snacks. The bar and stools provide a commanding view of the cargo hold below and the office across the way.

As with the office, the doors exiting the room lead onto the cargo hold balcony while the ladder leads to the chamber below. On this side of the hold that lower chamber houses the secure storage vaults. Also like the office, this room is difficult to access if the cargo hold is full of liquid, pressurized gas, or some other inhospitable cargo. When this is the case, the doors are sealed and the room can only be reached by traversing the crawlway beneath the hold floor than coming up the ladder from the vault chamber.

6. Engineering

The engineering room is built hard up against the ship's power core (a refurbished hydrogen-fed fusion reactor) and access to the chamber is via a short ladder at the aft end of the cargo hold balcony. If the cargo hold is impassable, then this room is inaccessible. While this may seem like a serious design flaw, redundant displays on the bridge allow



for common engineering tasks to be completed remotely and serious repairs or modifications typically require EVA (Extra-Vehicular Activity) to access the necessary components regardless.

The chamber itself is low-ceilinged and cramped. Often it is hot and loud due to the surrounding systems. Diagnostic and control panels are squeezed in where possible and removable wall and floor plates allow hand-on access to power and life support systems.

Lower Deck

7. Air Locks

The primary air lock for the ship is on the port side of the living area. It is built low in the hull for easy access when the ship is landed. Inside the lock a short flight of stairs leads up to the level of the lower deck – emerging at the aft end of the galley area.

A secondary air lock can be found at the bow of the ship. This one terminates in a round hatch and can extend forward somewhat in order to mate up with a similar tube from another ship or station. If the ship is on the ground, this hatch is more than a dozen feet off the ground. It is rarely used except for staging EVA and for connecting directly to starport terminals when the ship is on the tarmac.

The ladder tube amidships can also function as a small air lock and there are extendible couplers at the top and bottom of that tube to facilitate linkage with other ships in the void.

8. Communications / Sensors

Sandwiched into the front end of the ship is a narrow room filled with communications, sensors, and navigation systems. The ship's rudimentary computer core is also accessible from here as it oversees and coordinates the above systems. As with the engineering room in the back of the ship, wall and floor panels can be removed to allow direct access to several key components. Also as with engineering, basic functionality can be routed to the bridge. Because of this the comm/sensor room is often unoccupied or staffed by a crewman hanging out in the galley with the door propped open.

9. Galley & Mess

The forward section of the lower deck is dedicated to living space for the crew and the galley is the large open area within this space. A kitchen section is set against the foremost wall. It contains a sink, stove/oven, and refrigerator; plus an old-fashioned dish washer beneath the countertop. A large dining table with seating for eight occupies a raised area on the starboard side. A wall screen video unit and sofa (which can fold out into a bed) also occupy the spacious dining alcove.

The remainder of the galley space is more or less a wide hall running down the center of the ship. On one side are stairs leading up to access area of the upper deck.

On the opposite wall are the doors leading into the barracks. Additional exits at the aft end of the hall lead into the cargo hold, the primary air lock, and the central ladder tube.

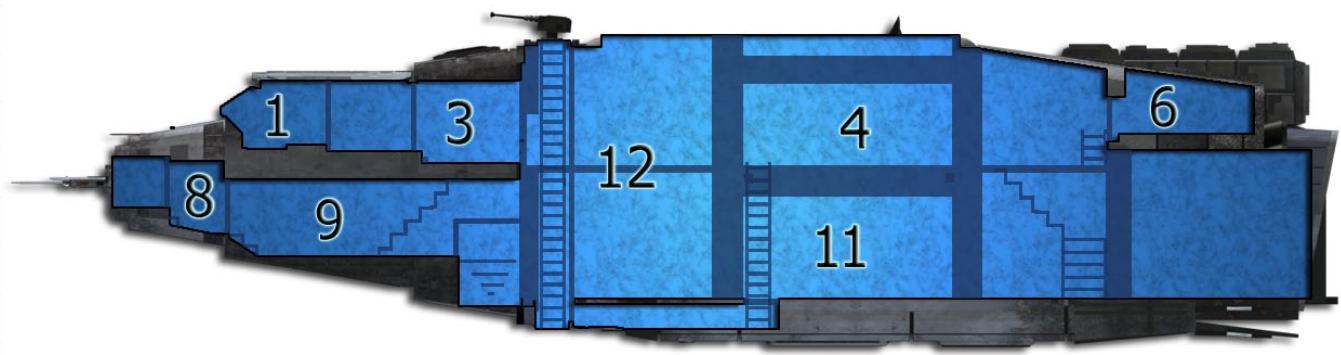
A large, though grimy, restroom is located to port. It contains a pair of showers and trio of toilets & sinks. A rusty steel cabinet holds supplies. Immediately forward of the restroom and adjacent to the kitchen area is a food storage pantry. Within the pantry a cabinet and shelves hold food, dishes, and similar items. A freezer unit is also provided. The Scarab-class does not have rehydration units and so must devote a fair amount of space to food storage. On long hauls an additional crate or two may be kept in the hold to resupply the kitchen and pantry as needed.

As mentioned previously, Scarab has a ladder tube running vertically through the ship. On the lower deck, it can be accessed at the aft end of the galley area. Going up the ladder from this deck would place one in the upper level of the tube. Going down, one would pass the crawlspace access and then

11. Garage

This class of ship comes with a pair of exo-frame cargo movers. These are mech-like exoskeletons “worn” by a single operator. The chamber at deck level on the port side of the hold is a garage dedicated to the storage and upkeep of this equipment. Though one of the dirtier areas on a typically filthy ship, the garage has all of the facilities needed to maintain and repair the exo-frames. Recharging ports are built into the wall as is a diagnostics console. A pair of rusty lockers holds tools and parts. Crates outside hold additional gear as well as alternate attachments for the frames.

One wall of the room is a garage door which slides up to allow for easy access. A couple of normal (human sized) doors also lead out of the room, though these are sometimes blocked by cargo. As with all means of exiting the cargo hold, the doors to the garage are reinforced and constructed to withstand the various substances and conditions that may fill the hold outside. A ladder leads up to the office above and down to a crawlway tunnel beneath the cargo bay floor.



reach the pressure hatch in the bottom of the ship. This can be used to exit the vessel even when landed as the engine nacelles keep the middle part of the hull several feet above the tarmac.

10. Barracks

All crew members aside from the captain share a single room for sleeping. There are four pairs of bunk beds, allowing for eight crew members plus the captain under normal circumstances. These are typically divided into two shifts of four but it is not unheard of for these ships (especially the larger Kiboko) to carry a dozen crew members instead. In these cases the beds are either used in shifts or replaced with triple bunks.

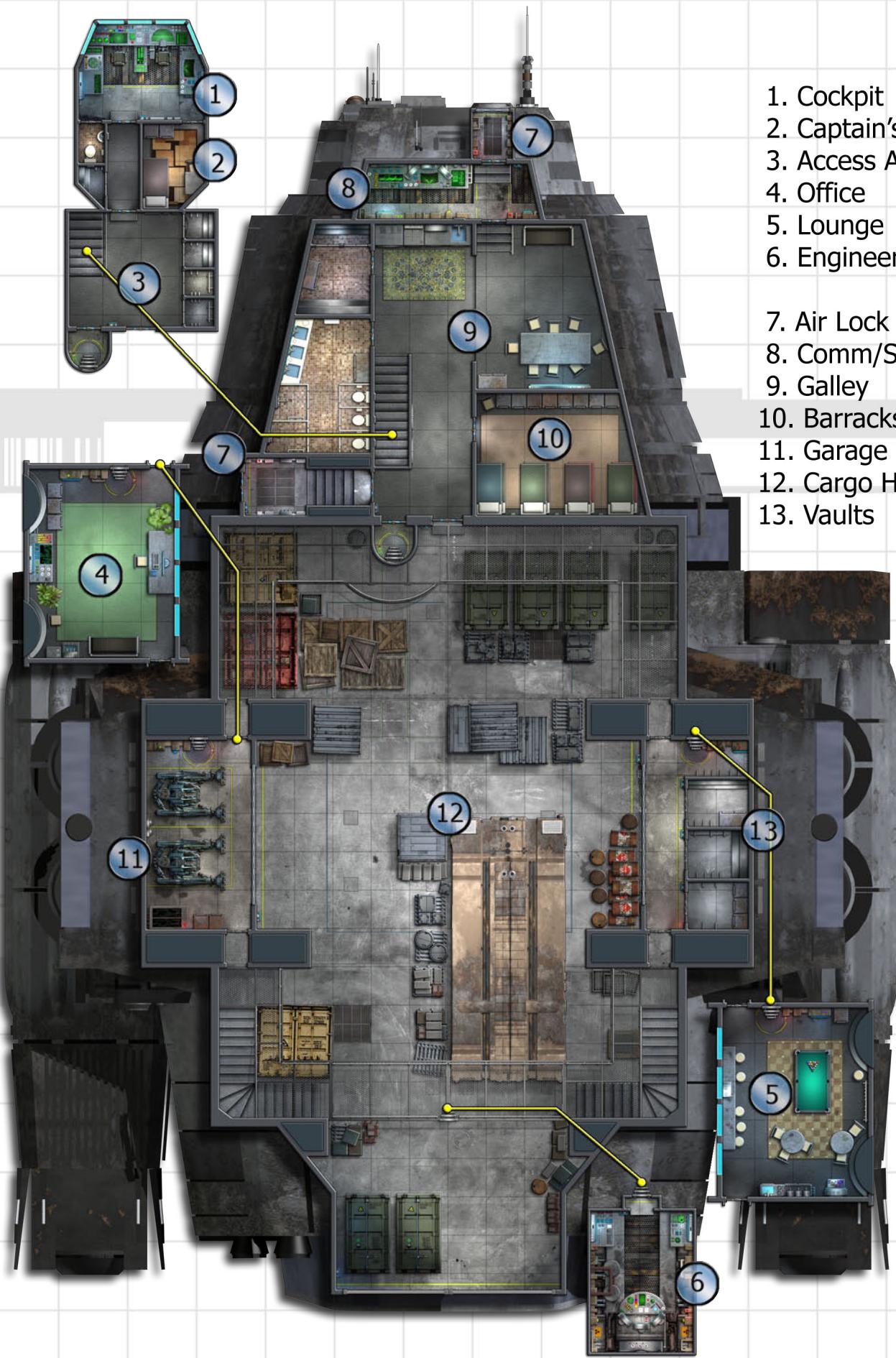
Storage lockers are provided for crew uniforms and personal effects. Bedding and similar items are stored underneath the stairs outside.

12. Cargo Hold

The majority of hull space in a Scarab, and even more so in a Kiboko, is taken up by a single cavernous cargo hold. In a Scarab-class vessel, the hold is 100 feet long, up to 60 feet wide, and 35 feet high for most of its length. If filled to capacity this yields over 1600 register tons of cargo space. The Kiboko-class design lengthens the hold by another 80 feet, increasing the cargo space to 3,200 register tons.

Both the roof and the back end of the ship sport massive doors that allow for rapid loading and unloading of bulk cargo. There are dedicated hookups for adding and extracting liquid cargos and pressurized gases. Structural support is provided by a framework of girders and ribbing – leaving the hold itself free of pillars and other obstructions. The floor contains numerous clamps, tie downs, and magnetic fusing plates for securing cargo.

On one side of the hold is a garage for cargo moving equipment. On the other side is a secure storage area for small, valuable, cargo. At the forward end doors lead to the crew space. At the aft end a retractable ramp allows for easy access to the ground.



1. Cockpit
2. Captain's Cabin
3. Access Area
4. Office
5. Lounge
6. Engineering
7. Air Lock
8. Comm/Sensors
9. Galley
10. Barracks
11. Garage
12. Cargo Hold
13. Vaults

The Balcony

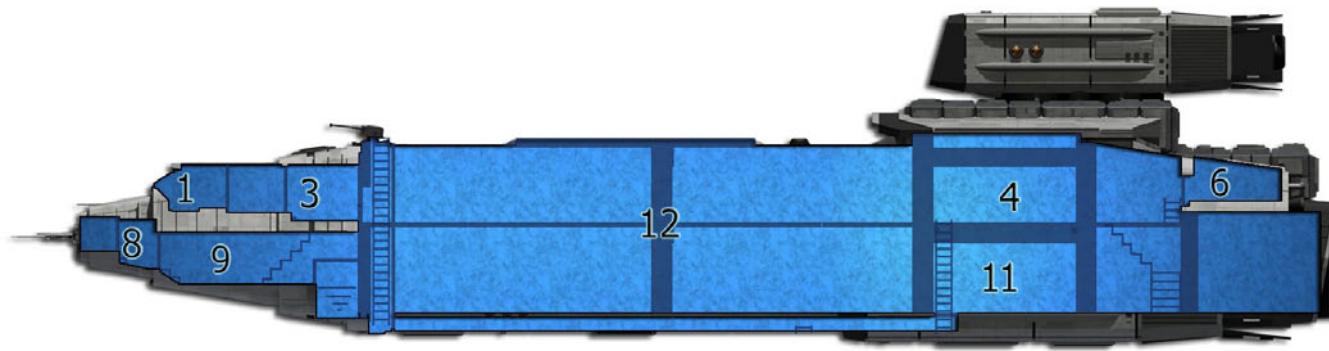
A metal mesh balcony encircles the hold about sixteen feet above the deck. Steep stairs near the aft end provide access to the balcony and the upper level rooms. On the port side of the upper level an office looks down over the hold. Across from this a bar-like lounge has a similar view. A short ladder in the middle of the aft section of balcony leads into the small engineering area.

This aft balcony section is split in the middle (under the ladder) and can fold up to either side like a draw bridge or be removed entirely. A small semi-circular section of the balcony at the forward end of the hold can also be pulled up. The reason for these cumbersome modifications is to fit standard HMT-337 shipping containers snugly into the hold. These ubiquitous boxes are 35 ft long, 15 ft high, and 15 ft wide. They hold about 70 register tons of cargo. While a single layer of containers can fit beneath the balcony, a second layer requires that these balcony sections to be moved out of the way. It also facilitates loading and unloading such containers from above.

then T's right and left. The starboard branch ends beneath the ladder in the vaults chamber while the port branch comes up in the garage.

The purpose of this crawlway is to allow access to the garage, vaults, office, and lounge when the cargo hold is full of liquid or compressed gas; or just filled to the brim with garbage, scrap, or rock. The passage is awkward to traverse when planet side but lies beneath the gravity plating in the floor and so is at zero-G when the ship is in space. Still, there is not much room for passing should a crew member meet someone going the other way along the padded and dimly lit tube.

On the map, the path of the crawlway can be traced by the removable panels in the floor over its route. Note that the engineering room is NOT accessible by any means short of EVA if the cargo hold is sealed.



A Scarab can squeeze in eight such shipping containers (four on the deck and four more on top of these) while a Kiboko can hold up to sixteen. Maneuvering these container in such tight quarters requires skilled operators and the judicious application of anti-grav and inertial manipulation technology.

It is not uncommon for these ships to carry customized containers (holding passenger quarters or other specialized "rooms") on a semi-permanent basis. With the removal of some railing, the second story of containers can be entered from the forward balcony section.

The Crawlway

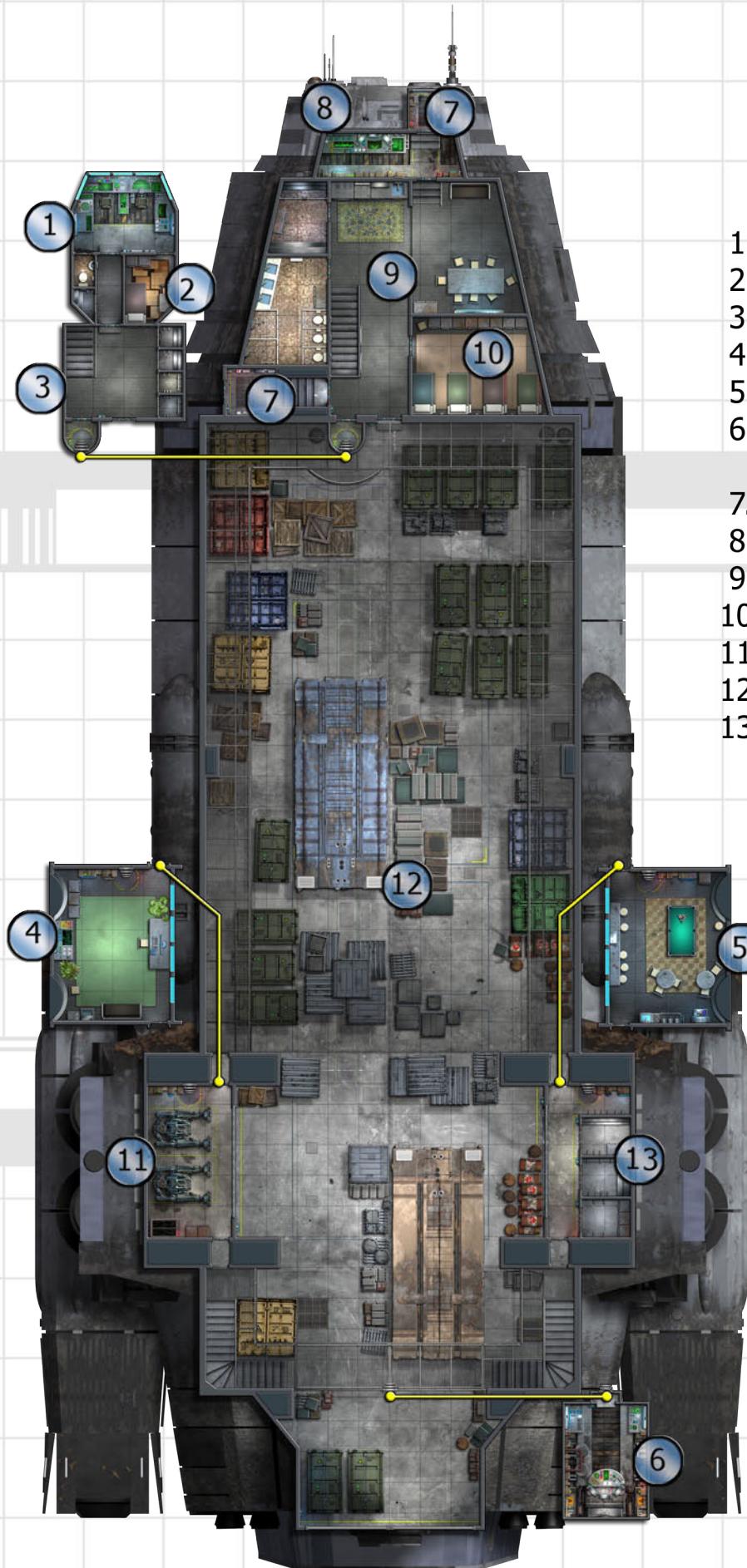
Between the floor of the cargo hold and the bottom hull of the ship is nearly four feet of space dedicated to structural supports and ship's systems. This is one reason that the Scarab does not have "bomb bay" doors in the floor of its hold (the other reason being the cheap anti-grav system which makes hovering the ship in atmosphere difficult). This area also contains a crawlway: a padded tunnel about 3 feet across through which crew members can crawl or float. The crawlway starts at the central ladder tube near the front of the cargo hold. It heads towards the middle of the hold and

13. Vaults

Within this area are three secure storage rooms. The doors are reinforced and the area has additional sensors and alarms. These small rooms aren't vaults like one would find in a bank, but they do provide a much higher degree of security and privacy than the main cargo hold. Of course stowage rates are also much higher for customers who wish to keep their valuables here.

Because demand for secure storage is typically low on this type of ship, the forward-most vault is also used to store tools and cleaning supplies. Outside of the vaults this chamber has some engineering panels and a ladder which leads up to the lounge and down to the crawlway beneath the cargo hold. The room is also equipped with a garage door which can slide up into the ceiling. This reduces the security of the room but adds another 100 square feet of usable floor space to the main hold.

Note that on the map this sliding garage door is shown closed with barrels stacked up against it. The vault room is entered through standard doors fore and aft. These doors are at the level of the cargo bay floor. The balcony is overhead, at the level of the lounge and office.



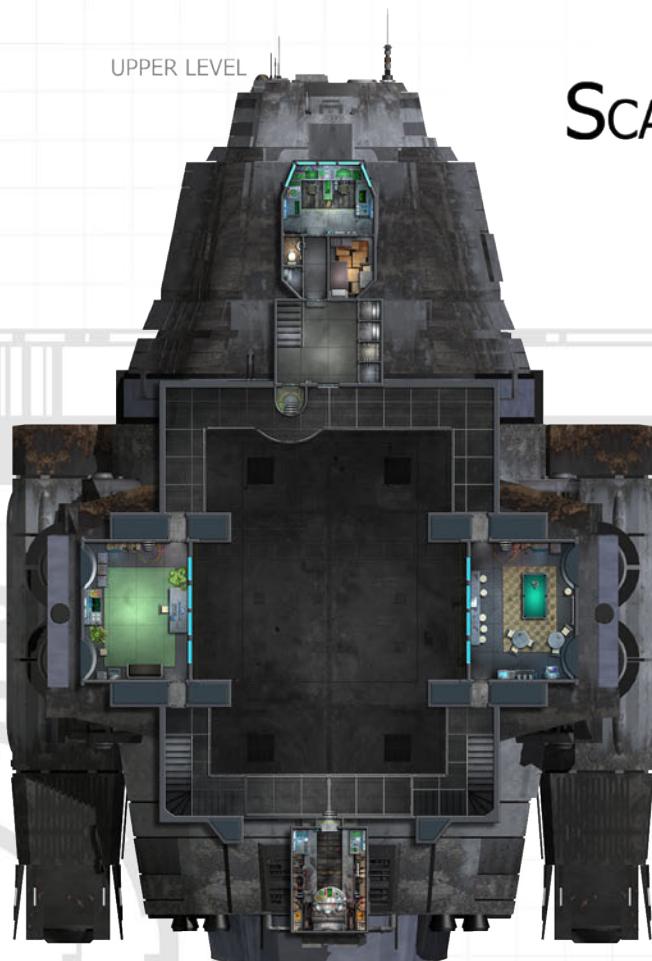
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10. Barracks
11. Garage
12. Cargo Hold
13. Vaults

For the sake of clarity, the images below and on the next page explicitly show the complete levels of each ship. Note that that darkened area on the upper level (surrounded by and beneath the balcony) is open to the level below.

The image to the right shows how a set of standard HMT-337 cargo containers fit into the hold. This could be two stacks of the fifteen foot high 337s, or three stacks of the ten foot high 327s. Note that sections of the balcony have to be folded up or removed to accommodate more than one level of containers.



SCARAB





Additional Information

Exo-Frame Cargo Mover

An exo-frame cargo mover is basically a forklift you wear. The operator stands within the frame and it mimics his or her leg, torso, and arm movements. Though speed is slow and agility non-existent, the exo-frame provides the strength and stability needed to handle the type of cargo commonly found on board today's freight haulers. The frame is open to the elements and so the operator must be suited up if working in a hostile environment.

The "hands" of an exo-frame are detachable and can be replaced with equipment suited to a specific task. Exo-frames on a Scarab or Kiboko will use push plates* for heavy jobs. An exo-frame equipped with such plates can reliably maneuver a fully loaded shipping container. For smaller jobs, the push plates can be replaced with claw-like appendages designed for crates, pallets, and loose cargo. There are other appendage options available: everything from bulldozer-like plows, to scoops, to fire suppression systems, but only claws and push plates are supplied as standard equipment on these ships.

*A push plate is a heavy, thick square of metal and electronics typically two to three feet on a side – much like a section of grav plating cut from the deck of a ship plus an internal power supply and controls. One side of the plate is designed to molecularly adhere to crates and containers constructed of metal or common composites, while the other has the controls and handles for lifting/pushing. When paired with a matching set of plates, a local anti-gravity field is set up between – allowing the bracketed object to hover weightless. Inertial manipulation is also possible to a limited extent (effective mainly as a braking mechanism). Power usage ramps up geometrically as mass and distance between the plates increases. They work well for moving crates, cars, and containers, but burn out too quickly to be useful when applied to objects like ships and large shuttles.

[END OF CHAPTER]



