



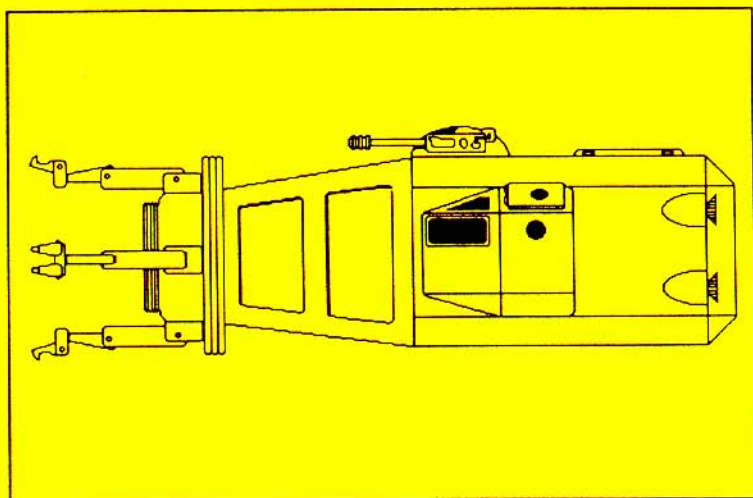
The **ADJUTANT**

RM-90-07

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Imperial Armed Forces Vehicle Guide, Altair Sub-Sector

Set Number Seven,
Orbital Assault & Landing Craft



Introduction

Thank you for your purchase of this vehicle guide. It contains orbital assault and landing craft designed for use with science fiction role playing systems. The specifications are comprehensive enough that conversion to most any system should cause no problems.

This vehicle guide departs somewhat from the previous guides in our series. While all the craft in this guide are capable of offensive combat activities, most of these vessels are designed to carry war materials to the heart of the enemy. They are the medium between the rear area and the soon to be FEBA. All the best combat equipment and soldiers in the universe are of no value if there is no way to deliver them to where they are needed.

It has been suggested that massive, all-capable dreadnoughts are the way to proceed as regards space navies. I feel this is a huge waste of resources as well as ensuring an eventual collapse of your empire as you attempt to combat a foe with many more smaller dedicated craft. As with land and water vehicles, spacecraft are specialized. Battleships are the "big guns", Carriers carry spacecraft. Add in the myriad of escorts, fuelers, supply and support ships and any task can be handled with the proper combination of these ships in a task force.

The only possible exception to this rule is the "Wasp" class carrier. It carries Infantry, Vehicles, Atmospheric Aircraft, as well as orbital fighters and assault carriers. This ship however must be escorted by fuel ships, supply ships, and should be escorted by destroyers and cruisers in order to ensure its survival. It is a capital ship that should be used as the centerpiece of a battle group.

When conducting assaults on worlds, the age old lessons of any invasion must be known and adhered to. The most important thing to remember is LOGISTICS! You must have sufficient supplies to keep your troops in the field and on the offensive. Fuel, Food, Munitions, Medical Supplies, Repair Parts, Replacement Vehicles, Fresh troops, are all absolutely essential to maintain a successful operation. No modern day army ever won a war by being on the defensive. If you go to the trouble of sending a huge force to the next world or system, you had better ensure they have enough of everything they will need in order to accomplish the goals you put them there to achieve in the first place.

It is with this thought in mind that this guide is published. No battleships, or even destroyers are to be found here. They have been detailed in other publications. What is found here are the actual assault vessels and "mother" ships that carry and land the invading troops. Along with these ships are the support and supply ships necessary to launch a successful invasion.

These ships use a combination of high energy weapons and conventional chemically propelled munitions. Why use conventional munitions? Cost. Besides, conventional bombs and bullets are much more effective on the battle field than lasers since they are not stopped by anti-laser aresols. The lasers installed on the larger ships are designed for use in space where smoke and atmospheric interference do not hinder thier effectiveness (all though sandcasters certainly will). Missiles are used to bombard the planet because their flight path is easy to correct "in-flight" as they hurtleplanetward. Lasers, Plasma guns and the like are hard to adjust once fired at the speed of light and offer a wonderful line for tracking back to the firing vessels.

At the back of this guide, an suggested invasion sequence in offered. While not the definitive last work on the subject, it offers a framework and sequence of events for the would be invader. We can only pray there are no "Divine Winds" in space ready to wreck invasion fleets. The Koreans and the Spanish both learned this lesson the hard way.

I hope this brief explanation helps in the use of this guide in your campaigns. I will be happy to answer any questions or clarify an unclear point, simply enclose an S.A.S.E. with your questions and I will return an answer to you. Look for other sets outlining different combat vehicle families.

Also write for a sample issue of The ADJUTANT, a newsletter written for Traveller Army, Marine and Mercenary characters. Published six times a year, each issue is full of rules variants, suggestions, personal weapons, etc. At only \$10.00 per year, it's one of the best deals in the Imperium.

Mark Schmidt

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Acknowledgments

Anyone who has ever tried to design new and innovative vehicles for a science fiction game realize the complexities involved. Great amounts of time are spent in calculating and designing all the components that make up futuristic combat vehicles. Especially aircraft. We have all stayed up until the wee hours of the morning before the gaming session vainly trying to get the last little details worked out for gadget hungry players. As GMs, we have all been placed in this unenviable position.

It is my intent to save you the time and aggravation required to put vehicles into your campaign. I hope you find this and future guides useful. My thanks and deepfelt gratitude go to the following individuals for their help in working as many of the "bugs" out of this package as is possible;

Steve Popp, for his valuable design & production asistance,
Mike Schadze, for the concept of the Wolvarine Space Mine.

Thanks to these and other friends without whose help this project would never have been.

Mark Schmidt

Other guides in this series include:

RM-90-01	Air Cushioned Vehicles
RM-90-02	Rotary & Fixed Wing Vehicles
RM-90-03	Tracked Vehicles
RM-90-04	Wheeled Service & Support Vehicles
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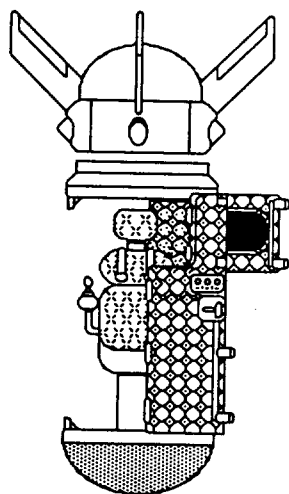
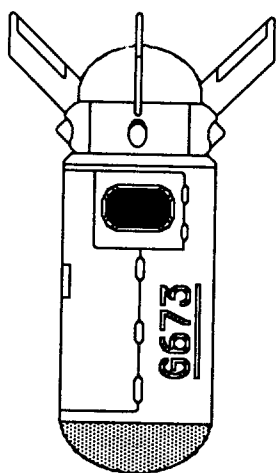
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M-1005

The M-1005 LARVAE (Launched Assault Re-Entry Vehicle, Attach Echelon) is the primary vehicle used for orbital planetary assault by drop troops. Comprised of three sections they are equipped to carry one combat soldier with up to 1/2 ton of equipment or two tons of equipment or supplies when no personnel are present. The capsule is loaded, and programed with either "live" or Cargo mode then fired from a special accelerator cannon on OASIS class carriers. A small fuel cell powers equipment on board during the short transition to inside the planet's atmosphere. A 6G compensator is fitted in the floor to protect the occupant or cargo from launch (8-9 Gs). A ceramic composite heat shield provides protection during entry. An ECM package begins to operate as soon as the capsule passes through the ionized layer of upper atmosphere to protect the capsule from hostile ground or aircraft fire. A small chaff flare and decoy launcher is fitted to the top thruster pack. Should all of these protective measures fail, the soldier may engage in limited evasive maneuver with the four fins and reaction thrusters mounted in the thruster pack. This system also allows the soldier to "steer" to compensate for any drift or scatter, allowing units to stay tightly grouped. When the M-1005 reaches a preset altitude, the thruster pack jetisons and acts as a decoy while explosive bolts in the base and sides of the capsule separate it away from the contents. A glide chute or parasail deploys allowing the soldier to steer safely to the ground. For cargo the load stays attached to the bottom shield and a chutes automatically deploy to slow the descent. These capsules are usable only once. In an emergency they may also be used as an effective escape capsule for a single individual for the duration stated below.

SPECIFICATIONS:

Dimensions:	1.75 m L x 1.25 m Round
Combat Weight:	1 metric Ton
Displacement:	1/3 ton
Power Plant:	Fuel Cell, .25 megawatt output
Endurance:	3 hours
Max. Speed:	Dependant on Surface Gravity & Atmosphere
Launch Speed:	8-9 Gs
Max. Eff. Rng:	3 hours at 6 G constant acceleration (in space).
Weapons:	none
Armor:	Actual 75 mm, Rated at 210 mm
Crew:	1 (occupant)
Electronics:	L3TV, IFF
Offensive:	none
Defensive:	Mk IV EW, Chaff & Flares 5 ea.
Cargo:	2 tons (up to 2 m3) or 1 passenger & 1/2 ton (1/2 m3)
Agility:	1
Turn Rate:	45°
G Rating:	+/- 8
Transport Volume:	4 m3
Price:	25,000 Cr

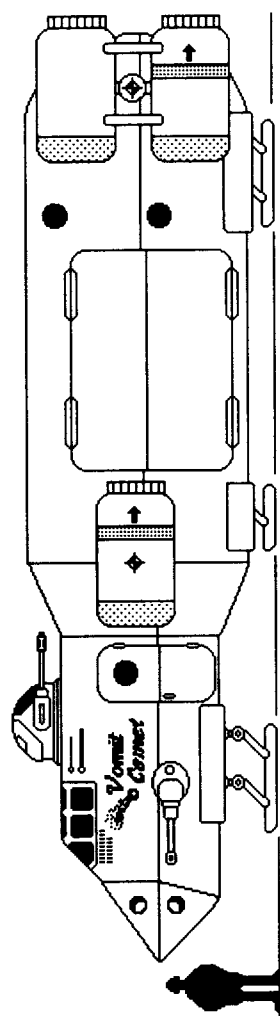


M-1020

The M-1020 is an orbit capable planetary assault platform. Its primary role is to deposit ground forces or supplies to FEBA and FLOT locations. It can operate for up to 21 hours without refueling. Propulsion is supplied via a fusion power plant driving 6 directional-thrust nozzles allowing VTOL capability. The craft is launched from the mother ship and allowed to "drop" into atmosphere. Re-entry heat dissipation is accomplished with shield generator powered by the fusion plant until the thrusters are required. A crew of 7 delivers up to 64 combat troops seated in an over under configuration or 2 small vehicles with crews, or 64 tons of cargo. Troops exit the upper seating deck via slide poles and the cargo bay via split doors on either side of the vehicle. It is armed with twin 20mm, single barreled, HPV-RFCs in a manned turret. 2,500 HEAP Rounds are fed via an electric drive from bins stored below. There is also a remote turret housing a 40mm HPV-RFC on either side of the forward fuselage. These can be slaved to the point defense computer or operated independently. They fire 1,000 rounds of HEAP or HEI via an electric drive. Should escape become necessary, the pilot, co-pilot and turret gunner have ejection seats, while the engineers and side gunners use escape hatches located on the roof and belly of the flight deck. All crew carry a self contained E&E package. The belly and lower half of this craft is equipped with 100 mm of armor with an effective value of 350 mm. The belly, by virtue of its flat shape also acts as a wing providing additional lift to aid in flight.

SPECIFICATIONS:

Dimensions:	16.5 m L x 6 m W x 5.5 m H
Combat Weight:	400 metric Tons, (loaded)
Power Plant:	Fusion, 127 megawatt output
Fuel Req.:	1296 liters/hour, 14,000 liters carried (2 tons)
Endurance:	21 hours, (12 hours max. for crew)
Max. Speed:	2500 kph
Min. Speed:	0 (VTOL)
Cruise Speed:	1935 kph
NOE Speed:	100 kph
Max. Eff. Rng:	41,800 km (after atmosphere entry)
Weapons:	2 single barrel 20mm, HPV-RFCs; 2 single barrel 40mm, HPV-RFCs
Fire Rate:	20mm - 56 Rounds / turn / gun; 40mm - 28 Rounds / turn / gun
Feed Device:	20mm - Electric drive from 2,500 round bins 40mm - Electric Drive from 1,000 round bins
Armor:	Actual 100 mm, Rated at 350 mm
Crew:	7 - Pilot/Cmndr, Co-Pilot, 2 Engrs., 3-Gunners
Electronics:	AWLS/AWTR, IFF, INS,
Offensive:	Mk XII T4
Defensive:	Mk IX EW, Point Defense Fire Control, Chaff & Flares 20 ea.
Cargo:	64 tons or 64 passengers
Agility:	34
Turn Rate:	79° at cruise speed
G Rating:	+/- 5
Transport Volume:	24,000 m3
Price:	157,966,000 Cr

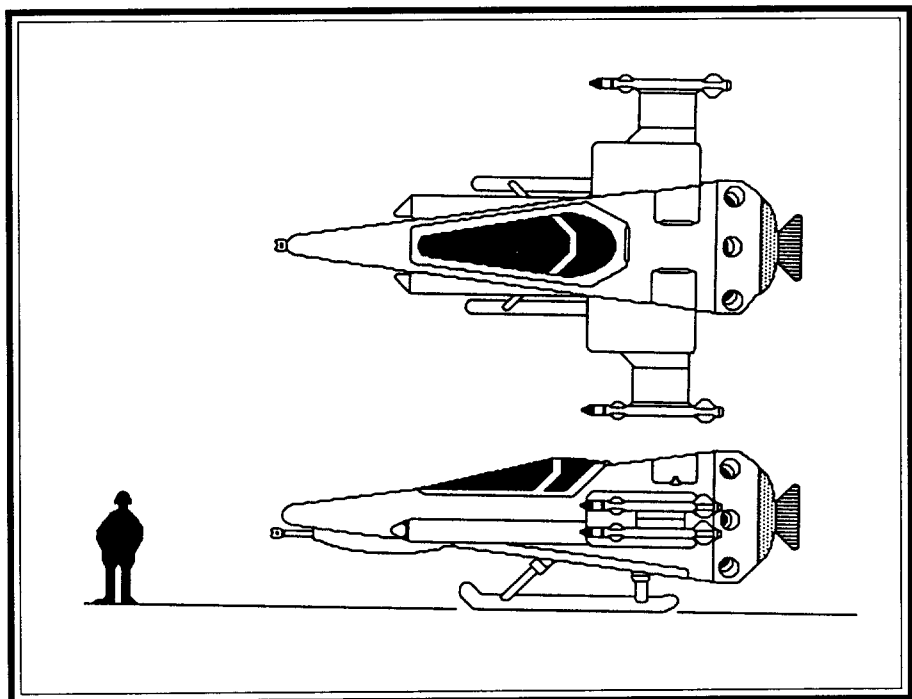


M-1034

The M-1034 Mosquito is a small tactical fighter designed for close orbital support and defensive combat operations against intruder craft. Normally carried aboard capital ships (see M-1038, WASP class) they are launched during combat operations to establish a safe perimeter to operate within. They are highly maneuverable in zero gravity by use of articulated nozzles at the rear of the craft. It is well armed with a single pulse laser mounted in the nose and two fuselage mounted missile racks, each with 6 short range missiles as well as 4 wingtip mounted medium range missiles. An automated, extensive EW package is installed for defense against hostile missiles and tracking radars. In operations on worlds with no atmosphere, this craft can also be used in a limited ground support role or as a conventional tactical fighter for Air Superiority and SEAD roles. In an emergency, this craft may be used to penetrate an atmosphere, but the pilot must eject as soon as possible because the craft lacks suitable control surfaces for sustainable controlled flight..

SPECIFICATIONS:

Dimensions:	9.75 m L x 6 m W x 3 m H
Combat Weight:	16 metric Tons
Displacement:	9 tons
Power Plant:	Fusion, 4 megawatt output
Fuel Req.:	96 liters/hour, 1,750 liters carried (1/4 tons)
Endurance:	36 hours, (8 hours max. for crew)
Acceleration:	5 Gs
Max. Speed:	2600 kph
Min. Speed:	200 kph
Cruise Speed:	na
Max. Eff. Rng:	93,600 km
Weapons:	1 Pulse Laser, 2 Missile Pods, 4 wingtip rails
Fire Rate:	Laser 2 shot /turn; missile 2 SRMs or 2 MRMs / turn
Feed Device:	Missiles fed from rotary carrier
Armor:	Actual 75 mm, Rated at 225 mm
Crew:	1 - Pilot
Electronics:	IFF, INS,
Offensive:	Mk XII T4
Defensive:	Mk IX EW, Chaff & Flares 10 ea.
Cargo:	none
Agility:	40
Turn Rate:	180° at cruise speed
G Rating:	+/- 7



M-458 Seeker Medium Range Missile:

Warhead: Equiv. to 240 kg, 380 mm pent., 12 m burst radius with 45 mm frag. pent.
Fuse: Delayed
Guidance: STAFF
Range: 3 minutes controlled flight, 1 minute coast on course (then self detonates)
Speed: 9 Gs
Agility: 50
Weight: 300 kg.
Price: 5,500 cr

M-459 Terminator Short Range Missile:

Warhead: Equiv. to 120 kg, 190 mm pent., 6m burst radius with 25 mm frag. pent.
Fuse: Proximity
Guidance: STAFF
Range: 1 minutes controlled flight, 1 minute coast on course (then self detonates)
Speed: 9 Gs
Agility: 60
Weight: 100 kg.
Price: 3,500 cr

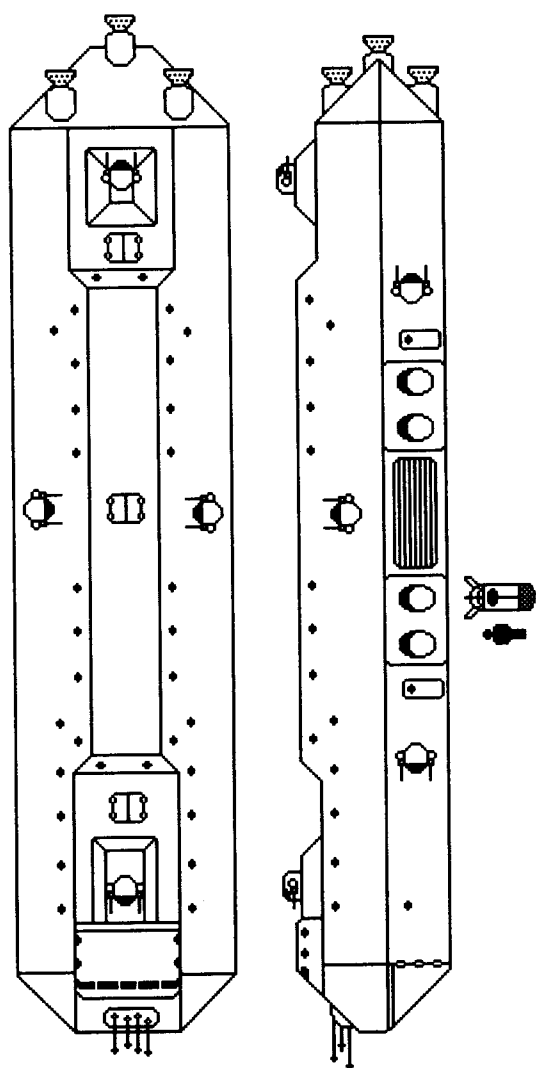
Note: A favorite trick of Mosquito pilots against sandcaster equipped vessels is to fire a short range missile set to detonate in the sancaster's field with a medium range missile directly behind it. The first missile clears a path through the sand for the 2nd misile to attack the ship.

M-1038

The M-1038 OASIS (Orbital Assault Ship, Infantry Shuttle) is the primary ship used by Planetary assault troops when using the LARVAE capsules. Known affectionately as "Capsule Crappers" by the crew it can discharge 100 capsules in 2.5 minutes. This is accomplished via four Mass-Driver launch tubes located on the port side and fed from a linked conveyor. Between the fore and aft tube sets is a large cargo door for departure of up to eight grav sleds normally used with infantry companies. In place of the capsules, up to 50 grav sled / grav bikes can be carried for cavalry squadrons also known as the "Grav Cav" (for a full description of Grav Bikes and sleds see RM-90-09 Infantry Weapons Guide). Propulsion is supplied via a fusion power plant driving 5 directional-thrust nozzles allowing precise position maintenance during launch operations. Crews and troops quarters allow for up to 2 months of transit time although assault troops must sleep in racks 8 levels high. This ship is armed with eight twin turrets mounting pulse lasers as well as defensive ECM and EW capabilities. Reloading of the launch conveyor is quickly accomplished through large cargo doors located in the bow. The belly and lower half of this craft is equipped with 200 mm of armor with an effective value of 700 mm. This is a fully equipped ship and is capable of interstellar flight .

SPECIFICATIONS:

Dimensions:	48 m L x 10 m W x 8 m H		
Displacement:	275 Tons		
Power Plant:	Fusion, 3750 megawatt output		
Fuel:	125 tons		
Computer:	5 FIB (12 online programs, 25 stored)		
Endurance:	6 weeks		
Jump No.:	4		
Acceleration:	5 Gs		
Surface Capable:	no		
Weapons:	16 pulse lasers in eight turrets		
Fire Rate:	2 shots per gun		
Armor:	Bottom	Sides, Top	
Actual/Rated	200 mm / 700 mm	100 mm / 350 mm	
Crew:	Officers: 8, Enlisted: 22		
Passengers:	Up to 100		
Electronics:	Standard, IFF, INS,		
Offensive:	Mk XII T4		
Defensive:	Mk IX EW, Point Defense Fire Control		
Cargo:	100 tons with passengers, 300 tons without		
Agility:	1		
Turn Rate:	30° per game turn		
G Rating:	+/- 7		

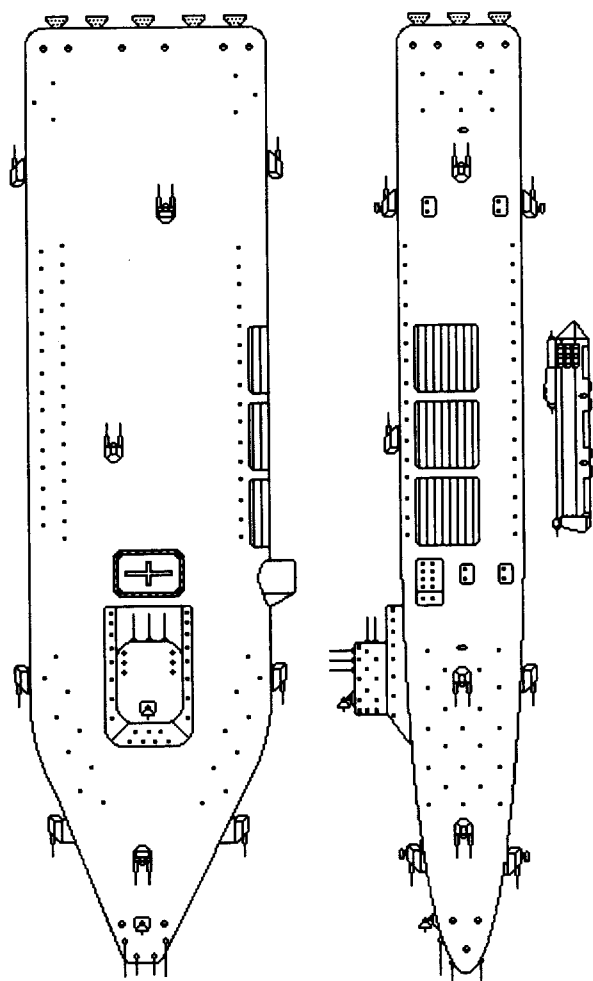


M-1040

The M-1040 "Wasp" class assault carrier is the main "mother" ship used in making planetary assaults. It is the primary capital ship in the assault battle group. From its decks command and control of the entire operation is maintained. A huge cargo bay, and three launch bays ensure a Battalion size force can be sent to the planet from each Wasp class carrier. Defense is entrusted to four Mosquito fighters carried onboard and launched from a separate bay located to the rear of the bridge. 12 triple turrets provide close-in defense along with ECM/EW capability. The cargo bay holds up to 72 AFVs with another six in each of the three OSLVs carried. To provide medium shuttle and command capability three OSLPs are carried. Berthing areas for up to 2,400 troops are provided with semi-private and private state rooms for the officers. Supplies for the assault Battalion are held in a 12,200 m3 cargo bay. Power to the ship is provided by four fusion power plants with a combined output of 16,000 megawatts. Landing of an entire Battalion can be accomplished in just over two hours. Only one variation of this class ship has been made to date. It is a Mercy Class hospital ship with 6,000 beds and 24 operating rooms as well as a full range of medical treatment facilities for soldiers wounded in action.

SPECIFICATIONS:

Dimensions:	112 m L x 40 m W x 32 m H
Displacement:	6400 Tons
Power Plant:	4 Fusion Plants, 16 gigawatt combined output (16000 megawatts)
Fuel:	2624 tons
Computer:	4 FIB (8 online programs, 15 stored)
Endurance:	4 weeks
Jump No.:	4
Acceleration:	4 Gs
Surface Capable:	no
Weapons:	12 Triple turrets: 8 w/twin pulse laser/sandcasters, 4 w twin pulse laser and missile launcher
Fire Rate:	2 shots per gun /turn, 2 missiles per turret, 1 sandcaster launch / turn
Crew:	Officers: 12, Enlisted:120
Passengers:	Up to 2400
Electronics:	Standard, IFF, INS,
Offensive:	Mk XII T4
Defensive:	Mk IX EW, Point Defense Fire Control
Cargo:	12,200 m3, 90 AFVs
Agility:	0
Turn Rate:	15° per game turn
G Rating:	+/- 4
Special Equipment:	3 launch bays, 4 Mosquito Fighters, 3 OSLVs, 3 OSLPs
Price:	314 Billion Cr

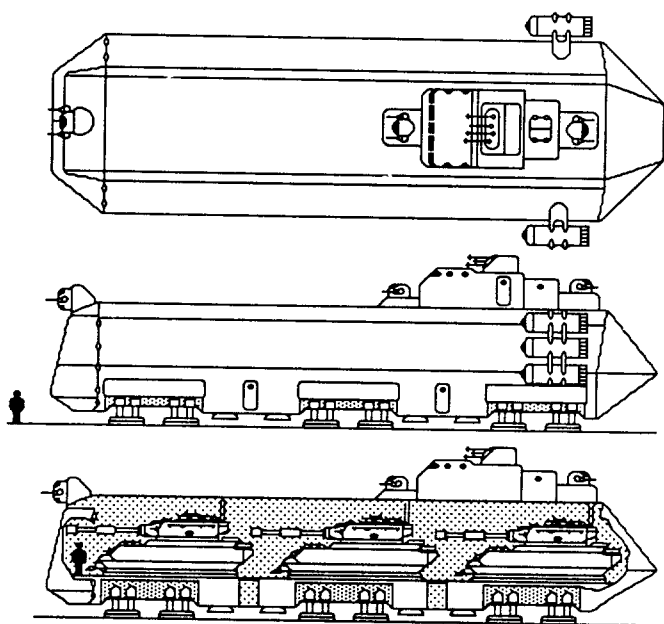


M-1050

The M-1050 OSLG (Orbital Ship, Landing, General purpose) is a medium delivery vehicle used to shuttle men and materials from orbital craft, like the WASP, to the battle area on the planets surface. It is similar to the Landing Craft used in wet navies. Capable of carrying a sizable load (up to 6 vehicles or 2300 m3), it can deliver an armored platoon or a reinforced company of infantry to FEBA positions. It is moderately armed with three twin gun turrets mounting mass driver cannons for use in atmosphere and on the ground as well as space should the need arise. Manuever is accomplished with two 3-engine thruster pods mounted at the rear of the fuselage. Landing is made possible by use of Grav thrusters mounted in the belly of the craft. After touch down, the front of the ship opens via large clamshell doors. Rear doors may be also be opened to expedite loading and unloading. These vessels are normally carried on Wasp class assault ships and are used to ferry cargo and wounded from battle areas to rear area or orbital support facilities. They may also be used as cargo shuttles between orbital ships. The cargo hold may be fitted for vessels, bulk cargo, infantry or as an evacuation ship for wounded. It is also possible for airborne troops to make parachute assault against ground positions from this craft, although it is designed to take troops directly to the FEBA.

SPECIFICATIONS:

Dimensions:	32 m L x 12 m W x 9 m H
Displacement:	245 Tons
Power Plant:	Fusion, 2450 megawatt output
Fuel Req.:	3,000 liters/hour, 68,000 liters carried (9.8 tons)
Endurance:	22 hours, (12 hours max. for crew)
Max. Speed:	800 kph
Min. Speed:	0 (VTOL)
Cruise Speed:	600 kph
NOE Speed:	n/a
Max. Eff. Rng:	17,600 km (after atmosphere entry)
Weapons:	3 turrets mounting twin mass driver guns
Fire Rate:	40 rounds /gun / turret
Feed Device:	Electric belt from 10,000 round bin / gun
Armor:	Actual 100 mm, Rated at 350 mm
Crew:	8 Officers, 12 Enlisted
Electronics:	AWLS/AWTR, IFF, INS,
Offensive:	Mk XII T4
Defensive:	Mk IX EW, Point Defense Fire Control, Chaff & Flares 20 ea.
Cargo:	2300 m3 (170 men, 85 stretchers or up to 6 AFVs)
Agility:	1
Turn Rate:	30° at cruise speed
G Rating:	+/- 4
Transport Volume:	38.000 m3
Price:	80 million Cr

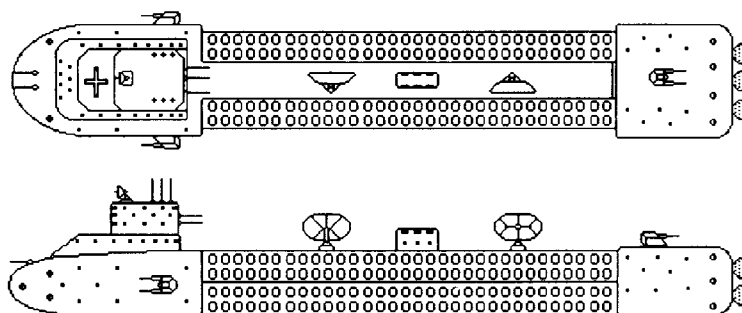


M-1060

The M-1060 "Zeus" class ship is an orbital fire support platform. Carried amidship in individual launch tubes are 256 Barrage missiles, each with one of several different types of warheads available. The ship carries a mix of warheads predetermined by the mission objectives. Two large Terra-Scan Phased Array radomes are positioned on the top of the missile compartment as is the Combat Information Center (CIC). The ship takes up station in low orbit (400 to 500 Km) and receives fire missions from ground units or can follow a predetermined bombardment plan from the command elements aboard Wasp class carriers. The most devastating use for the Zeus is when it is used in groups and targets or subjected to a tactic known as "Ripple Fire" where all the missiles in the ships are fired at a confined location. This is usually several square kilometers depending in the concentration of fire desired. The forward section of the ship and the engineering section are both modular and can be found on other support ships. In a defensive role, this ship can carry rocket assisted mines, most notably the M-112 Wolverine. Missiles are typically fired from one side first, then while the other side is firing, a replenishment ship can complete reloading procedures in approximately 62 hours.

SPECIFICATIONS:

Dimensions:	120 m L x 24 m W x 21 m H
Displacement:	3500 Tons
Power Plant:	2 Fusion Plants, 8.75 gigawatt combined output (8750 megawatts)
Fuel:	1435 tons
Computer:	4 FIB (8 online programs, 15 stored)
Endurance:	6 weeks
Jump No.:	4
Acceleration:	4 Gs
Surface Capable:	no
Weapons:	3 Triple turrets w/twin pulse laser/sandcasters
Fire Rate:	2 shots per gun /turn, 1 sandcaster launch / turn
Crew:	Officers: 12, Enlisted: 21
Passengers:	2 squads Marines and up to 10 passengers
Electronics:	Standard, IFF, INS,
Offensive:	Mk XII T4
Defensive:	Mk IX EW, Point Defense Fire Control
Cargo:	20 tons
Agility:	0
Turn Rate:	30° per game turn
G Rating:	+/- 5
Special Equipment:	Phased Array Ground Radar, Infrared Imaging
Price:	1.855 Billion Cr (plus missile cost)



M-114 "Barrage" OGM (orbit to ground missile):

Dimensions: 9 m L x 1.5 m rad.

Fuel: Cold shot for launch, solid fuel accelerator

Warhead	Guidance	Fuse	Effect	Cost Cr	Notes
HE	Target Mem	Impact	5 m/60 m/60 mm	3000	1
CBM	same	Proximity	90 mm/200 m2/40 mm	4500	1,2
CIB	same	same	3 m/500 m2/50 mm	12000	1,3
AT	STAFF	Delayed	500 mm/ 2 km2	15000	4
FAM	Target Mem	Proximity	100 mm/400 m2	6000	5
Nuclear	same	variable	by size	variable	6
Chemical	same	Proximity	by type	variable	6

1. Contact penetration / area of affect radius / fragmentation penetration
2. Cluster Bomb sub-Munition, 1,000 1 kg bomblets,
3. Clustered Iron Bomb, 25 250 kg iron bombs
4. Anti Tank submunitions, 100 coordinated anti tank missiles
5. Fuel Air Munition, blast overpresre of over 1,000 kg/cm2
6. To be determined by GM, normally prohibited by rules or war.

M-112 "Wolvarine" Orbital Mine:

The M-112 is a special planetary defense mine placed in orbit in anticipation of planetary invasion. When activated it looks for enemy ships then attempts to maneuver next to them and activate a jump field generator. It takes anything within 35 meters into jump space. An extensive ECM/EW package, prevents ships from detecting these mines until large chunks of ship start to disappear. These mines are encoded so they will not hunt each other but may target the same ship. They may be set for a specific class of ship and are set to ignore friendly vessels with IFF. Normal concentration is one mine every 25,000 m3. These mines have been used successfully when placed in low orbit around gas giants to deny refueling to enemy fleets. They are encoded with a deactivation circuit and may be picked up by special engineering units after hostilities are over.

Dimensions: 3 m L X 2 m Diameter

Displacement: 2.5 tons

Max. Duration: 2 months

Effect Radius: 35 meters

Defense: Extensive ECM/EW

Electronics: Passice ELINT, MAD/IR (mas anomaly detector)

Acceleration: 4 Gs

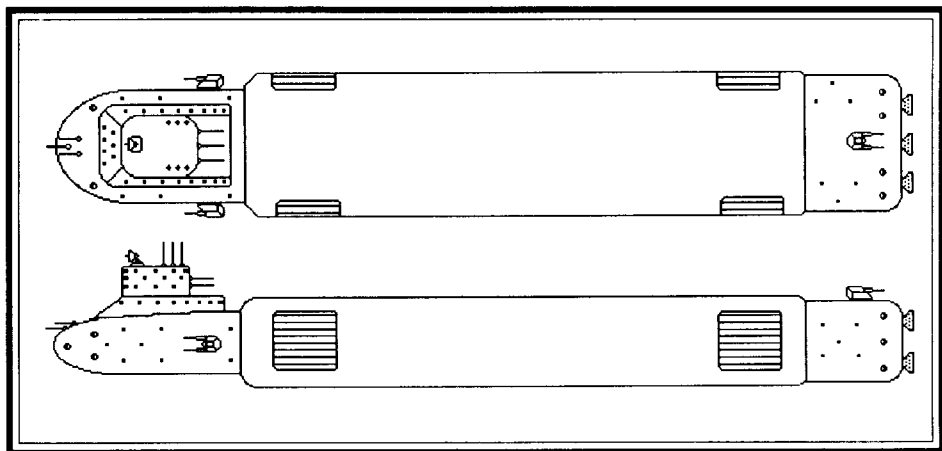
Cost: 2.4 million Cr

M-1065

The M-1065 "Ark" class ship is a cargo ship used to preposition war materials in strategic locations in order to shorten supply lines should hostilities break out. Because of the modular design of the cargo hold, everything from combat vehicles to food and munitions are stored on these ships. Special grav-assist cargo handlers are able to rapidly on or offload some or all of the cargo. The forward section of the ship and the engineering section are both modular and can be found on other support ships. Three triple turrets provide close-in defense. To facilitate off loading in space, shuttles may utilize two loading bays located fore and aft of the cargo section. For larger ships, the Ark class can pull alongside and attach a flexible umbilical to load directly from itself to the receiving vessel. These ships are also used in task forces as resupply vessels.

SPECIFICATIONS:

Dimensions:	120 m L x 26 m W x 22 m H
Displacement:	3800 Tons
Power Plant:	2 Fusion Plants, 8.75 gigawatt combined output (8750 megawatts)
Fuel:	1560 tons
Computer:	4 FIB (8 online programs, 15 stored)
Endurance:	6 weeks underway; 24 weeks onstation
Jump No.:	4
Acceleration:	4 Gs
Surface Capable:	no
Weapons:	3 Triple turrets w/twin pulse laser/sandcasters
Fire Rate:	2 shots per gun /turn, 1 sandcaster launch / turn
Crew:	Officers: 12, Enlisted: 24
Passengers:	2 squads Marines and up to 10 passengers
Electronics:	Standard, IFF, INS,
Offensive:	Mk XII T4
Defensive:	Mk IX EW, Point Defense Fire Control
Cargo:	1415 tons (19,810 m3)
Agility:	0
Turn Rate:	30° per game turn
G Rating:	+/- 5
Special Equipment:	Off loading Umbilical, 2 way cargo bays, grav assist cargo handlers
Price:	1.545 billion Cr



Cargo Capacity Assumptions:

Each soldier typically requires an average of 45 kg of consumable goods per day. This includes food, water, ammunition and other expendable goods. An average Regimental sized force contains 1,668 soldiers. This is 75,060 kg of material per day per regiment. Averaging storage space at 100 kg per cubic meter, one days supply for the Regiment takes up 750.6 m³. With a cargo capacity of 19,810 m³, one cargo ship can hold enough supplies to keep the regiment in the field for up to 26 days. Mechanized units average 90 kg per man per day. The supply ship could keep a battalion sized armored force in the field for 13 days.

It should be noted that an aircraft squadron requires an average of 454 kg of materials per man per day. This is primarily made up of munitions and fuel, so our single cargo ship could supply only enough material to keep an air squadron in the air for 2.6 days.

Naval ships typically require only 35 kg per man per day so a single cargo ship can supply enough consumables to keep 1886 sailors supplied for 30 days.

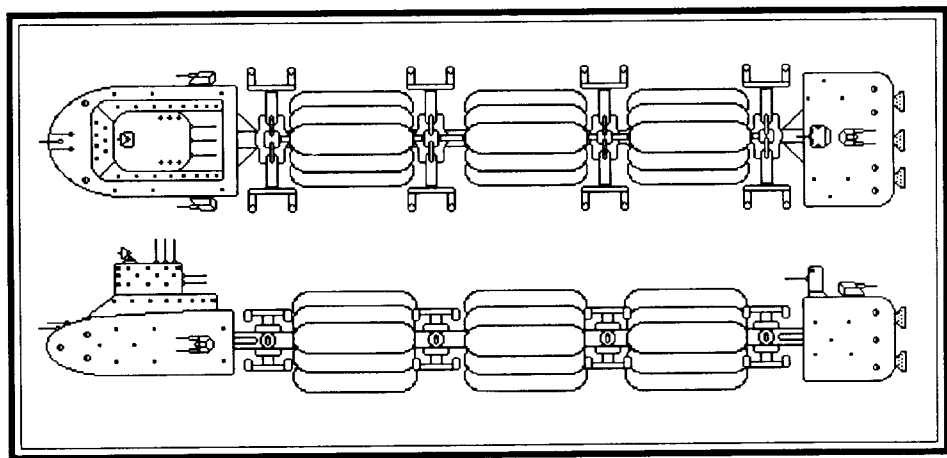
Heavy combat, extreme weather conditions, heavy gravity and other environmental factors can combine to drive the daily requirements of fighting troops up beyond this average. We therefore see where the true power of a successful military force is. Logistics! You can also see the need for prepositioned supply ships able to instantly supply fielded troops rather than having to rely on a supply chain back to the originating system for the attack.

M-1068

The M-1068 "Oiler" class ship is a liquids cargo container ship used refuel naval vessels or provide an orbital storage point for ground based fuel needs. The foreward section of the ship and the engineering section are both modular and can be found on other support ships. Three triple turrets provide close-in defense. To facilitate refueling operation, eight fllexible, automated umbilicals can extend to nearby ships. These are controled and coordinated from a small conning tower located in the forwar part of the engineering section. These ships can carry any tpe of liquid neccesary to field military units. Fuel, water, lubricants, liquified gasses are all storable in the large tanks located amidship. Mixed loads are often carried to enable this ship to fill the widest variety of potential needs. For fuel replenishment operations, the ship can fuel skim in gas giant atmospheres with retractable fuel scoops. An onboard refining plant treats the raw fuel and transfer pumps store in in the tanks.

SPECIFICATIONS:

Dimensions:	120 m L x 26 m W x 22 m H
Displacement:	1950 Tons
Power Plant:	2 Fusion Plants, 8.75 gigawatt combined output (8750 megawatts)
Fuel:	837 tons (internal)
Computer:	4 FIB (8 online programs, 15 stored)
Endurance:	6 weeks
Jump No.:	4
Acceleration:	4 Gs
Surface Capable:	no
Weapons:	3 Triple turrets w/twin pulse laser/sandcasters
Fire Rate:	2 shots per gun /turn, 1 sandcaster launch / turn
Crew:	Officers: 12, Enlisted: 28
Passengers:	1 squad Marines and up to 20 passengers
Electronics:	Standard, IFF, INS,
Offensive:	Mk XII T4
Defensive:	Mk IX EW, Point Defense Fire Control
Cargo:	1125 tons fuel (15,750,000 liters) in 24 tanks
Agility:	0
Turn Rate:	30° per game turn
G Rating:	+/- 5
Special Equipment:	8 Fueling Umbilicals, Skimmers & Fuel purification plant
Price:	651 million Cr



Fueling:

While fueling in orbit entails only minor difficulties, getting fuel from orbit to ground units can constitute a major logistical problem. Thankfully, fusion power plants are very efficient and are a far cry from the internal combustion engines of the late 20th and early 21st century. Still, a division consumes a vast amount of fuel when on the move so stores must be created maintained on the ground near the edge of battle.

To move fuel from orbit to the planet's surface, collapsible bladders are fitted in the cargo holds of either M-1020s or M-1050s. Each bladder holds up to 20 tons (28,000 liters) of fuel. The M-1020 can hold two of these bladders with transfer pumps, while the M-1050 holds up to 20 of these bladders for a total of 560,000 liters.

The bladders may be offloaded when empty to create fuel depots and then filled with the use of transfer pumps from shuttles carrying additional, full bladders. Transfer rates average approximately 1200 liters per minute.

Specifications:

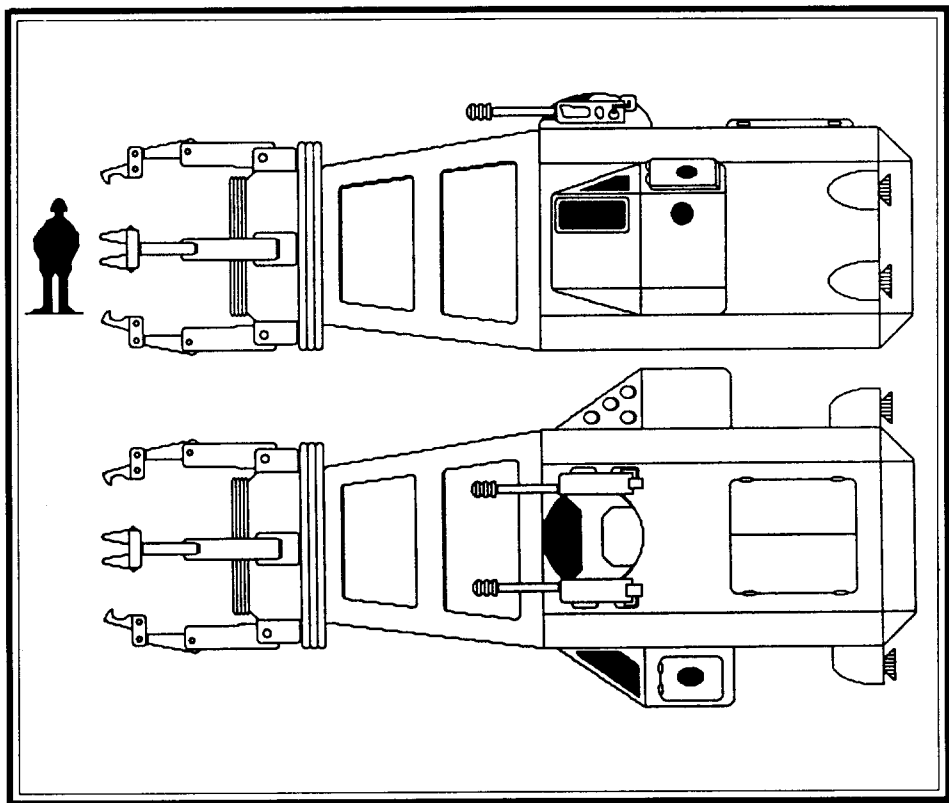
Size:	20 tons (displacement) 280 m3 (full)
Capacity:	28,000 liters
Pump:	1200 liters / minute, powered by fuel cell
Transport Vol.:	1 ton
Armor:	Bullet resistant, self sealing; equal to 3 cm
Cost:	1200 cr

M-1070

The M-1070 Lamprey is a specialized orbital assault craft. Its primary role is to safely deliver a squad of assault marines to an enemy ship and provide a forced entry point for them to access the vessel. The ship is equipped with extensive ECM as well as decoys and can achieve an acceleration of up to 6 Gs. With its electronic package it is stealth capable. The pilot will attempt to draw as close to the enemy ship as possible before taking hostile action. Located at the front of the craft are four hydraulic grappling arms with posi-lok claws used to firmly attach the Lamprey to an enemy ship. A shaped charge then blows an access hole in the side of the host vessel. Next a pneumatic ring seals the gap between the two ships and then an inner door on the lamprey opens. Because there is a time delay from breaching charge to seal, a pressure difference is created so that when the inner door is opened, all debris is forced into the host ship and clear of the entry way. This then allows the passengers to disembark. At this point the Lamprey may detach or may stay in position. Defensive armament includes twin pulse lasers mounted in a turret on top of the main hull and an eight missile launch nacelle on the starboard side of the hull. A variation of the Lamprey class ships is a Orbital Tug used to ferry cargo containers or help maneuver medium size craft (under 10,000 tons). In this role, extra fuel is carried rather than passengers and a pneumatic bumper is fixed instead of the explosive ring. Normal concentration is one tug per 1,000 tons of vehicle to be pushed.

SPECIFICATIONS:

Dimensions:	19 m L x 8.25 m W x 7 m H
Displacement:	78 Tons
Power Plant:	Fusion, 60 megawatt output
Fuel Req.:	698 liters/hour, 6,000 liters carried
Endurance:	4 hours
Max. Acceleration:	6 Gs
Landing Capable:	no
Weapons:	2 Pulse Rapid Fire Pulse Laser Cannons, 8 Bore Missiles
Fire Rate:	2 shots / turn / gun; up to two missiles / turn
Armor:	Actual 100 mm, Rated at 350 mm
Crew:	2 - Pilot/Cmdr, Gunner/Loadmaster
Electronics:	IFF, INS,
Offensive:	Mk XII T4
Defensive:	Mk IX EW, Chaff & Flares 10 ea.
Passengers:	10
Cargo:	20 tons
Agility:	40
G Rating:	+/- 8
Transport Volume:	1,200 m ³
Price:	14,500,000 Cr



M-454 Bore Missile

Warhead: Equiv. to 240 Kg, 380 mm pent., 12 m burst radius with 45 mm frag. pent.

Fuse: Selectable: Delayed or Proximity

Guidance: Target memory, STAFF

Range: 2 minutes controlled flight (self detonating after 2 minutes)

Speed: 9 Gs

Agility: 60

Weight: 240 kg.

Price: 5,300 cr

Glossary of Terms

AAA	Anti-Aircraft Artillery, usually called "triple-A"
A/A	Air to Air
A/G	Air to Ground
AAM	Air to Air Missile
AEW	Airborne Early Warning
Aft	Nautical term for the "back or rear"
AGL	Above Ground Level, altitude, called "angels", ie: Angels 5 means at 5000 meters AGL
AIM	Air Intercept Missile
Alpha Strike	All out air strike involving the entire Air Wing
AOA	Angle Of Attack, degree to which aircraft can be flown above unloaded conditions, see V-Max
AP	Armored Piercing
APERS	Anti-Personnel
ARETS	Armor Remote Target System (provides target from extrnl source)
ASM	Air to Surface Missile
AWLS	All Weather Landing System
AWTR	All Weather Terrain following Radar
Bandit	Slang for unidentified A/A contact
Bingo	Minimum fuel needed to get back to base
Bogey	Confirmed enemy A/A contact
Bow	Nautical term for "Front" of the ship (see also fore)
CAG	Commander, Air Group, "air wing's boss"
CAP	Combat Air Patrol, "air to air"
CAS	Close Air Support, ground suport within 1500 meters "Ground Pounders"
Chaff	Small metal bits dispensed to confuse radar tracking systems
CBM	Cluster Bomblet Munition
Codex	Two digit ID# on craft's tail
CPM	Chemically Propelled Munition
CPR	Chemically Propelled Round
CSI	Computer Synthesized Image
C3	Command, Control & Communications
Deck	Slang for the Ground, called also "the Hard Deck"
Displacement	Nautical term for volume of water displaced by vessels hull (14 m3)
DPU	Depleted Uranium (used in warheads to increase penetration)
ECM	Electronic Countermeasures
ECCM	Electronic Counter-Countermeasures
E & E	Escape and Evasion, after being shot down
ELINT	Electronic Intelligence, sensor data for passive search
Envelope	Maximum parameters of crafts flight characteristics, "pushing the envelope" is flying beyond the recommended maximums
ESM	Electronic Support Measure, passive EW sensors
EW	Electronic Warfare
FAC	Forward Air Controller, coordinator on ground or in air
FAE	Fuel Air Explosive, type of munition using misted fuel
FCS	Fire Control System (Gunnery Computer)
FEBA	Forward Edge of Battle Area, the front lines!
FLIR	Forward Looking Infra-Red, Sensors for TADS/TOGS
FLOT	Forward Line of Own Troops (See FEBA)

FOD	Foreign Object Damage, damage to compressor fan blades caused by intake of debris (birds, bullets, trash, people?!)
Fore	Nautical term for "front"
G's	Force exerted when aircraft is pulled through a manouver. 1 G= the force of Terra's Gravity, 2 G's = twice Terra's Gravity, etc.
G-Rating	Maximum number of G's a craft can endure without possible damage
GTS	Gunnery Tracking System (works w/MTI)
HEAP	High Explosive, Armor Piercing
HEI	High Explosive, Incendiary
Hit the silk	Slang, Ejecting from a damaged craft, also called Bailing-Out
HPV-RFC	HyperVelocity, Rapid Fire Cannon
HUD	Heads Up Display, vital flight information is displayed on shield in front of canopy, used with HOTAS
IFF	Identification - Friend or Foe, electronic signal for ID
INS	Inertial Navigation System
IR	Infra-Red
k	1,000
kg	Kilogram, equals 2.2 pounds
kph	Kilometers per hour, each kph = .62 miles per hour
LGB	Laser Guided Bomb, smart munition
LMG	Light Machine Gun
LZ	Landing Zone, (hot LZ= enemy fire during Landing Operations)
L3TV	Low Light Level Television, optical sensor package for low light ops.
LTD	Laser Target Designator (paints laser target for gun or missile)
m3	Cubic meter, space equal to 1 meter by 1 meter by 1 meter
MEV	Medical Evacuation Vehicle
Modex	3 digit ID# on craft's nose
MRLS	Multiple Rocket Launching System (includes missiles)
MTI	Moving Target Indicator (tracks moving targets, see also GTS)
NBC	Nuclear, Biological, Chemical (protective system)
NOE	Nape Of Earth, see Terrain Mask
OGM	Orbit to Ground Munition, usually missiles
Ops	Slang for Combat Operations
Ordanance	Term for munitions, bombs, missles, etc.
PGM	Precision Guided Munition, see also LGM
PK	Probability of Kill, targeting system;HUD indicator, shows best time to shoot
Port	Nautical term for "Left" (remember Left & Port both have 4 letters)
RFC	Rapid Fire Cannon
SAM	Surfact to Air Missle
SAR	Search And Rescue
SEAD	Suppression of Enemy Air Defenses, pronounced "See-Ad"
SLAM	Stand-off Land Attack Missile
STAFF	Smart Target Activated, Fire & Forget
Starbord	Nautical term for "Right" (see "port")
Stern	Nautical term for the "Back" of a ship" (see also aft)

T4	TADS / TEAMS / TES / TOGS, integrated weapons system
TADS	Target Acquisition and Designation System, sighting and targeting computer
TEAMS	Tactical Electronic Aircraft Missile System, like the TES but for missiles
Terrain Mask	Flying NOE to avoid ground radar, lasers, etc
TES	Target Engagement System, sights for guns
TOGS	Thermal Observations & Gunnery System, IR sight
Turn & Burn	Slang, 180° course correction then full power applied
TWS	Track While Scan, allows radar tracking while continuing passive radar/IR scan
Vampire	Incoming hostile guided missile
VTOL	Vertical Take Off or Landing
V-MAX	Maximum Velocity airframe can withstand before damage occurs (the wings come ripping off)
Zombie	Slang, Craft Flying on Autopilot

Explanation of Terms

ARBS, ECCM, TEAMS, TOGS...?! Arggg! you say. What is all this *@#%?! I didn't buy this guide to learn government speak. Actually once you start to use these abbreviations, you'll be surprised how fast they stick. Let us explain how they work.

The T4 System is the package of controls and sensors that allow the crew to identify and engage targets. Within this system are Optical (L3TV), Infra-Red (FLIR) and Laser (LGB) sighting sub-systems.

The defensive measures allow you to attempt to break target locks by enemy air or ground forces. If you are unable to break a lock, then flares or chaff can be dropped to attempt a last ditch effort to avoid being "Splashed".

All Fixed wing and some rotary wing aircraft are equipped with a Mk. XII T4 offensive package. It contains the following Sensor/Computer sub-systems:

TADS, TEAMS, TES, TOGS
ARBS w/MER & L3TV, FLIR w/PK & TWS

These vehicles are also equipped with a MK IX EW Defensive package that contains the following measures:

ECM/ECCM, ELINT w/AEW, IFF
Physical defensive measure include Chaff and Flares.

Below is a list of what these "techspeak" terms can do for you in games terms.

OFFENSIVE

- ARBS required to bomb ground, (+pilot's skill level to hit target).
- L3TV Allows night or subdued-light bombing with no penalties
- TEAMS Locks missile on hostile target w/8+ (+ EW officer's skill level)
- TES 8+ for gun lock (+ pilot's skill level)
- TOGS IR backup if no optical sight possible, 6+ to lock
- TWS allows tracking of targets without going to active sensors (a lock), passive sensors are not detectable

DEFENSIVE

- ECM -2 to opponents attempt to target vehicle by radio or radar.
- ECCM +2 to relock if opponent's ECM breaks lock, -2 to opponent's roll if opponent's ECCM relocks
- ELINT Passive Radar sensors, can detect enemy aircraft or their active sensors out to 250 km (8+)
- IFF Responds to TADS query with electronic "pass word"
- Chaff 10+ to decoy incoming radar guided missile or break ground based TADS radar
- Flares 10+ to decoy incoming IR guided missile or break hostile ground based IR lock

GENERAL

- INS Always able to return to starting point

Conducting Planetary Invasions

“No plan survives contact with the enemy”. This military truism has been proven over and over again. However, the lack of good planning and preparation can lead to disaster more quickly than any other part of military operations. Listed below, in sequence, is a guideline to conduct planetary assault operations. It is by no means exhaustive, but rather provides a framework for strategic planning. Invasions, whether by sea, air assault or orbital assault are the most risky endeavor known to modern warfare. If something goes wrong, it is difficult, if not impossible, to recover troops committed to the landing. For this reason, extensive planning must go into every facet of the operation and contingencies must be prepared for as many “what if” situations you can think of.

Pre Invasion

- 1) Determine Campaign objectives
- 2) Gather intelligence on System Defense capabilities
- 3) Gather intelligence on Planetary Defense capabilities
- 4) Formulate order of battle and gather required combat forces and support units.
- 5) Estimate length of campaign and allow for at least 50% more supplies as a standard margin of error
- 6) Insert Special Forces, IMSOG or SEALs teams to neutralize planetary and system defenses where possible.
- 5) Jump in-system with screening and security elements to eliminate remaining system defenses and establish system beachhead.
- 7) Jump in-system with main task force.

Invasion

- 1) Advance screen elements neutralize remaining orbital defenses, pre-invasion force secures any orbital stations.
- 2) Neutralize orbital Intelligence, Communications and Defensive Satellite network.
- 3) Position Global Positioning Satellite Network.
- 4) Launch anti-SAM (Wild Weasel) operations against remaining planetary defense sites.
- 5) Initiate Atmospheric Air operations to secure air superiority and neutralize enemy air assets.
- 6) launch pre-invasion orbital missile barrage (special operations teams may act as laser designators to guide in missiles)
- 7) Launch initial landing force comprised of Marine Planetary Assault Force to secure planet based beach head.

Post Invasion

- 1) Reinforce Marine units.
- 2) Land Additional support and Line troops (Army)
- 3) Extend beach head outward to for base of operations.
- 4) Establish logistics center for resupply and forward medical centers.
- 5) Establish Air Domes and rearm/refit facilities for air squadrons for tactical close air support operations.
- 6) Conduct combined operations to achieve stated objectives.
- 7) Celebrate Victory!