
Mayday (M4.1)

Sean Bayan Schoonmayer has developed the following starship combat rules to replace the flawed set released in T4. The rules use the Classic **Traveller** game 'Mayday' for their inspiration, and are written to be compatible with the forthcoming revision of **Traveller's** playtest draft (released as T4.1). The system relies on Bruce Alan Macintosh's *Definitive Sensor Rules*, the T4 version of *Fire, Fusion and Steel (FFS2)* to provide the core design system. This Acrobat file has been locked down to only allow printing, and was produced by *BITS - British Isles Traveller Support*.

Game Scale

- Time: 1 hr. turns
- Distance: 1 hex = 5.0×10^7 m = 1/6th of a light second
- Thrust: 1 G = 10 m/s^2 , rounded up from the actual value of 9.8 m/s^2 .
- Delta X: for 1G for 1 hr. = 6.48×10^7 m
- Ships: Ships designed with FFS2.

Ranges

All ranges correspond to the normal T4 range bands, but only begin at the Planetary scale.

<u>Range(km)</u>	<u>Hexes</u>	<u>Range Factor</u>	<u>T4 Name</u>	<u>Band</u>
5×10^4	1	9	Planetary	Point Blank
1.5×10^5	3	9.5	(None)	Very Short
5×10^5	10	10	Far Orbit	Short
1.5×10^6	30	10.5	(None)	Medium
5×10^6	100	11	(None)	Long
1.5×10^7	300	11.5	(None)	Extreme
5×10^7	1000	12	(None)	

If you've got a map over 1000 hexes wide, you really need to get a life.

[NOTE: The oddball ranges may be eliminated, pending T4.1]

Facing

Ships do not have a facing in this game. Over the course of a turn, there is ample time for the pilot to realign the ship in whatever direction necessary to apply proper thrust, get off shots with weaponry, and any other tasks that require a specific facing. For convenience, and to give a good idea of where a ship is headed, the nose of the ship should be aligned approximately with its future position marker.

Turn Sequence

- (1) Determine Initiative
- (2) Movement
- (3) Sensor Detection/Lock
- (4) Weapons Fire Phase
 - (a) Declare Fire
 - (b) Energy Weapons
 - (c) Missile Launch/Detonation
 - (d) Damage
- (5) Vehicle Launch/Recovery
- (6) End Phase

(1) Initiative

For each player subtract both Starship Tactics skill and highest ship G rating from the total number of ships. If all the ships on one side are part of an integrated military unit, the commander's Fleet Tactics skill may also be subtracted from the total. The player with the lowest total has the initiative, followed by the next lowest total, etc. If two players are tied, they each roll a die to break the tie.

For a slightly more detailed initiative process, roll for each ship, using applicable modifiers for that ship only, then determine initiative order as above for individual ships as opposed to each player.

(2) Movement

Movement follows in order of size class and initiative. Starting with the highest size class, players move those vessels in reverse initiative order (from highest initiative total to lowest). They then move all vessels of the next lower size class in reverse initiative order, etc. All craft, including missiles, use a vectored movement system. The distance and direction in which a vessel moves is based partially on the previous game turn. Each vessel has a present position counter, and both a past and future position marker. The following procedure is used:

(a) Past

The past position marker is moved to the hex containing the present position counter.

(b) Present

The present position counter is moved to the hex containing the future position marker.

(c) Future

Count the hexes to the past position marker, keeping track of the exact direction. Place the future position marker the same number of hexes in exactly the opposite direction. Assuming the ship uses no thrust, this represents the ship's next position.

(d) Thrust

The vessel now applies thrust, moving the future position counter one hex for each G of thrust it wishes to apply, from zero up to the maximum G rating of the vessel.

(i) Gravity

Worlds, stars, and other phenomenon with enough mass, have associated gravity fields. The hexes surrounding the mass will have an arrow, or multiple arrows, showing the intensity and direction of the field. The number within any given arrow shows its strength, in G ratings. Any time a ship passes through a gravity hex, apply the appropriate direction and distance to the ship's future position marker before the ship applies thrust. Any body massive enough to possess a gravity field will also have the 100 diameter radius, in hexes, marked in the center of the counter, for purposes of determining jump eligibility in the endphase (6).

***Example:** A planet lies in hex 0610, and all the hexes surrounding the planet have strength one gravity fields directed back to hex 0610. A ship's current position counter lies in hex 0709, just outside the gravity field, and its future position counter lies in hex 0711, next to the planet (thus giving the ship a velocity of two hexes). If the ship applies no thrust on the next turn, it moves to hex 0711, and its unmodified future position marker goes to hex 0713. The ship, however, has moved into two gravity hexes, 0710 and 0711. The gravity field in 0710 moves the ship's future position marker to 0613, and the field in 0711 moves it to 0513. On the following turn, also assuming no thrust is applied, the ship moves into hex 0513, and its future position marker is moved to an unmodified position of 0315. The ship has passed through one last gravity hex moving away from the planet, 0611, which modifies the marker to its final resting place of hex 0314.*

(ii) Orbit

A ship whose velocity is sufficient to enter it into a circular path around a planet is considered to be in orbit. No thrust is required to maintain orbit, only to break free. For a one hex planet with a standard 1 G gravity field in the surrounding hexes, a ship need only move from one gravity hex to another to enter orbit. The combination of gravity fields and movement will draw the ship around the planet, completing one orbit every six turns.

(iii) Space/Planetary Interface

Planets are assumed to occupy their entire hex for simplicity's sake. A ship may land on a world by moving into the planet's hex at a speed of 1. Any speed greater than one will destroy the ship. If the planet has an atmosphere, the ship must also be streamlined.

Moons and asteroids occupy such a small portion of their hex that a ship may pass through that hex without penalty. Thrusters can make the minor course adjustments necessary to avoid the obstacles.

Gas Giants usually take up more than one hex; the center hex of a gas giant is treated as a normal planetary hex. The surrounding "fringe" hexes are considered to be atmosphere hexes. A ship passing through one of these hexes must be streamlined. Ships in orbit around a gas giant may count any turn in orbit as "skimming" for purposes of fuelling.

A ship spending its first turn in a gas giant's atmosphere is considered to be in the Upper atmosphere. Each subsequent turn that the ship remains in the atmosphere, either stationary or in orbit, it may ascend or descend one level. The three possible levels are: Upper, Lower, and Deep, and impose different modifiers on various tasks. Ships may not "land," per se, on a gas giant.

(iv) Interception

If, at the end of the movement phase, two ship counters occupy the same hex, interception has occurred. Missiles will detonate during the weapons fire phase (4)(c). Each hex actually represents a vast volume of space, so unintentional collisions are virtually impossible. Ships that have made interceptions may then match courses if they have sufficient thrust to do so.

(v) Matched Courses

When both ships' counters and future position markers are in the same hexes, they have matched courses. Ships which have matched courses may participate in boarding actions in the declare fire step (a) of the weapons fire phase (4). Small craft which have matched courses with their parent ships may land during the vehicle launch/recovery phase (5).

(3) Sensor Detection / Lock

NOTE: These sensor rules are based on "*Definitive Sensor Rules*" by Bruce Alan Macintosh. See Appendix A for guidelines on determining a ship's signature, or a ship's sensor sensitivity, when unknown.

Each ship declares what sensors it will use over the course of the turn. At a maximum, a ship may only use one active and one passive sensor system per turn. If necessary, this can be done in writing to avoid players attempting to take advantage of some ships' active scans.

Each turn, a ship may make any number of new detection attempts, up to once per opposing bogey marker. The ship may also make any number of attempts to maintain detection, up to once per opposing vessel or missile counter. The marker or counter must be within the maximum range of the ship's operating sensors. Locks may then be immediately attempted on ships that have been detected, allowing firing solutions.

Though there is no practical limit to the number of detected ships that may be tracked by a ship's sensors, a ship may only use one active and one passive sensor system over the course of a turn. (Those who don't mind the extra record keeping or complexity may adopt the following limits for active/passive sensors: TL8, 10/1; TL 9 10/3; TL 10-11, 20/10; TL 12-13, 40/20; TL14-15, 60/30.) The number of locks that a ship can maintain is limited by its fire control rating.

The procedure for determining detections and locks are as follows:

(a) Signal Strength.

Signal strength is calculated according to the following formula:

$$\text{Signal} = S - RF + TS + \text{Modifiers.}$$

S = Sensitivity of the sensors (from FFS2).

RF = Range Factor (see above).

TS = Target Signature, using active signature for active sensors, and either visible or infrared signature for the appropriate types of passive sensors.

Modifiers are taken from the following table. Optional modifiers should only be used by those who want added realism at the expense of some playability.

<u>Status</u>	<u>Active Mod.</u>	<u>Pass. Vis. Mod.</u>	<u>Pass. IR Mod.</u>
No Thrust	0	-0.5	0
Shutdown	0	-1	0
Active Sensors	+1	+1	+1
Evading	-0.5	-0.5	-0.5
Surprise	+0.5	+1	+0.5
Planet/Asteroid	-1	-1	-0.5
Landed	-2	-1	-0.5
Atmosphere	0	-0.5	0
Atmosphere GG	-1	-2	-1.5
Detect Last Turn	+1.5	+1.5	+1.5 (i)
Detect Last 5 Turns	+0.5	+0.5	+0.5 (i)
Lock	-1.5	-1.5	-1.5 (ii)
Jam	-0.5	-0.5	-0.5
Detect Handoff	+0.5	+0.5	+0.5
Lock Handoff	+1	+1	+1

(i) Not for Locks.

(ii) Use only one depending on jammer.

Basic Modifiers

No Thrust: Target used none of its G rating in (2)(d).

Shutdown: Target's power plant is shut down (excepting life support).

Active Sensors: Target used active sensors last turn.

Evading: Target used a portion of its G rating for evasion.

Surprise: Target is unaware that there are other ships in the area.

Planet/Asteroid: Target is in the same hex as a planet or asteroid counter.

Landed: Target has landed on a planet or asteroid.

Atmosphere: Target is within the atmosphere of a non-GG planet.

Atmosphere GG: Target is within the atmosphere of a GG.

Detect Last Turn: Vessel is rolling to maintain a previous detection.

Detect Last 5 Turns: Vessel is rolling to reestablish a previous detection.

Lock: Vessel is rolling for lock after a successful detection roll.

Jam: Target made a successful jamming task roll.

Detect Handoff: A friendly vessel with detection on the target is in communication with the sensing vessel.

Lock Handoff: A friendly vessel with lock on the target is in communication with the sensing vessel.

(i) Jamming

There are two different types of jammers, deceptive and area. A target unit may attempt to jam the detecting ship if it is equipped with one of these jamming systems. The sensing ship must be within the jammer's maximum range.

For active area jammers, a 60 degree arc must be chosen as the target arc.

Any sensing vessel attempting detection and/or lock within the arc may be effected. The success or failure of the task roll effects all such detection and lock attempts made on the ship.

*To jam detection and lock with active area jammer
(Range Factor) > Staggering (4D)*

Adjust the difficulty down one for every TL higher the jamming system is than the sensing system. Jamming sensors one TL higher is Impossible (6D); sensors more than two TLs higher cannot be area jammed.

For deceptive jammers, before any lock rolls, roll the appropriate task from the two given below:

*To jam active lock with deceptive jammer
(Range Factor) > Formidable (3D)*

Adjust the difficulty down one for every TL higher the jamming system is than the sensing system. Jamming sensors one TL higher is Impossible (6D); sensors more than two TLs higher cannot be area jammed.

*To jam passive lock with deceptive jammer
(Range Factor) > Impossible (6D)*

Adjust the difficulty down one for every TL higher the jamming system is than the sensing system. Jamming sensors of a TL higher is not possible.

Effects of a successful roll are the same for all jammer types. Apply a -0.5 modifier to the jamming ship's signal strength.

(b) Task Difficulty

The difficulty of the sensor task varies with both the signal strength and the type of sensors being used.

<u>Signal</u>	<u>Active Difficulty</u>	<u>Passive Difficulty</u>
<0	[No Detect/Lock]	[No Detect/Lock]
0	Impossible (6D)	Impossible (6D)
0.5	Average (2D)	Staggering (4D)
1	[Auto Detect/Lock]	Average (2D)
1.5	[Auto Detect/Lock]	Easy (1D)
2	[Auto Detect/Lock]	[Auto Detect/Lock]

(c) Task Roll

The target number for the roll is the unit's size rating

*To detect/lock a unit
(Ship Size) > Difficulty (see above)*

(i) Bogeys, Detection, and Lockons

All ships, small craft, or other vessels are initially represented as bogey markers. When the bogey markers are successfully detected, they are replaced with the appropriate unit counter. Detected ships may then be locked onto to allow firing resolutions.

Any small craft or missiles launched from a detected ship are automatically detected. Any missile fire from a locked ship is automatically locked, within the numerical limits of the vessel's fire control rating.

(4) Weapons Fire Phase

There are four steps within each weapons fire phase.

(a) Declare Fire

Each ship declares what weapons it will fire and their targets. If necessary this can be done secretly in writing to avoid "me too" firing situations. Laser batteries may be assigned to point defense for missiles which will detonate during step (c)

Any boarding actions are played out for the next hour during this step. A ship involved in offensive boarding action may not fire during this turn.

(i) Boarding Actions

(NOTE: These boarding action rules are essentially a modified BL system.)

Only ships without functional drives or weapons may be boarded. The boarding ship must first intercept and match courses with the disabled vessel. On the turn after this has been accomplished, the ship may send boarders into the disabled ship.

Divide the displacement tonnage of the disabled ship by 500 (FRN, excepting results less than 1, which are rounded to 1) to determine the number of hull areas.

Establish if each player is selecting an offensive or defensive posture for the course of the turn. This decision effects the number of dice that a player will use, and if it is possible for them to take hull areas. It is possible that both sides may select offensive or defensive postures, depending on the situation. Each player generates a total based on the number of his boarding parties, receiving +1 for every Marine, and +1 for every 2 other troops. Players with

offensive posture get one die and players with defensive posture get two dice, plus another die for every 3 points in his total. Any remainder results act as a DM on the roll.

Example: *If an attacking player had three Marines and four regular troops, he would roll two dice with a +2 DM.*

The player with the higher total captures one hull area, assuming they opted for an offensive posture. The result of the roll is the number of casualties on the other side. The victorious side may ignore one casualty per full die of the player with the lower total.

If the "defenders" of a boarding action are able to win a hull area on the "attackers" ship, on the next turn they may cut the cables (release the grapples, etc.). The attacker may not then reboard the ship till the following turn (i.e. if the defender "won" a hull area of the attacking ship on turn three, the attacker could not send more troops until turn five).

(b) Energy Weapons

Energy weapons are fired by vessels with a lock, in order of initiative, one ship's batteries at a time. A successful task roll indicates a hit. The damage of any hits may be reduced by any appropriate defense or screens. Damage points are applied immediately. See (d) for detailed damage procedure.

NOTE: It is important to adjust the battery numbers for standard T4 ships to reflect the increased rate of fire due to 1 hour turns. A ship with a RoF of 10, has an effective RoF of 60 for one Mayday turn. However, remember that a weapon's damage may never be increased more than double its unmodified rating by the rate of fire. Modify the battery numbers according to the following table:

<u>RoF Modifier</u>	
10	-1
50	0
100	+1
200	+2
400	+3
800	+4

The RoF Modifier may alternately be used as a DM on the to hit task, representing the spread of fire over an area, as opposed to putting all the shots on one point.

A vessel must have a lock on its target in order to accurately engage it. Vessels may attempt to fire at detected targets with no lock, but the difficulty level is modified upward by three levels. Difficulties modified above Impossible may not be attempted.

The following task must be successfully accomplished to hit the target.
Difficulty is based on range band.

*To hit with an energy weapon at Point Blank range
(Ship Size) > Difficult (2.5D)*

[NOTE: Increased difficulty is due to tracking problems at a high rate of closure.]

*To hit with an energy weapon at Very Short range
(Ship Size) > Average (2D)*

*To hit with an energy weapon at Short range
(Ship Size) > Difficult (2.5D)*

*To hit with an energy weapon at Medium range
(Ship Size) > Formidable (3D)*

*To hit with an energy weapon at Long range
(Ship Size) > Staggering (4D)*

*To hit with an energy weapon at Extreme range
(Ship Size) > Impossible (6D)*

DMs:

- + Target's thrust rating
- Fire control rating
- Predict program DM (see below)
- + Evasion DM (see below)
- +/- Crew Gunnery DM (see below)
- RoF Bonus

(c) Missile Launch / Detonation

Missile batteries may be fired by any ship with a lock, in order of initiative, one battery at a time. For each new volley of missiles, the firing ship must place a counter in the same hex as the firing ship, along with a past position marker in the same hex as the marker of the firing ship, and a future position marker, which is placed according to step (d) of the movement rules, using the missile's thrust rating to adjust its position. All missiles of equal thrust rating fired in this step, up to the maximum rating of the launcher, are considered a volley. A player may voluntarily reduce the thrust rating of some missiles to create a larger volley of a variety of missile types, but the thrust ratings thus reduced may not be increased back to original specifications.

The requirement of maintaining a lock on the target vessel depends on the type

of homing system in the missiles fired. The most basic system, controlled (C), requires a lock for the entire flight time of the missile, but if the ship has locks on multiple vessels, the target of the missile may be switched between locked targets.

For the semi-independent (SI) tracking system, the ship must also maintain a constant lock on the target ship, but may use the missile's sensors for lock modifiers if the target is within range. Use of the missile's on board sensors is not mandatory. The target of a SI missile may be switched if the same conditions for switching the target of a C missile are met.

The most advanced homing system, fully independent (FI), only requires a lock on the turn the missiles are fired, after which the missiles are either on a ballistic trajectory or maintain their own lock. When launched, the player must specify a number of turns, and a set acceleration, if desired, that the missile will follow a set course, at which point the missile turns on its sensors and acquires its target, so long as the target remains within the missile's sensor range. If the vessel has locks on multiple targets at the time of launch, the missile may be given a prioritised list of targets for when its sensors come on line. FI missiles only count against their ship's control limits on the turn of launch. Failure to meet any of the missile lock parameters causes the missile to go inert.

A note must be made for each volley, stating its exact composition and the targets of the missiles within it.

A ship may control a number of missiles equal to the MFD's control number times the number of MFDs dedicated to missile control (2 for TL9, 3 for TL10-11, 4 for TL12-13, 5 for TL14, and 6 for TL15).

When a missile's movement takes it into the same hex as the target ship, or the proper designated range for advance TL missiles, it will detonate in this step. A missile which is scheduled to detonate still counts against the ship's control limits for the remainder of the turn. Any missile which survives countermeasures and successfully detonates rolls the following task. Proximity detonation missiles, available at higher tech levels, avoid most countermeasures by detonating farther away from the ship, usually one to three hexes. Hitting the ship at range, however, is slightly more difficult.

*To "hit" with a missile at Point Blank range
(Ship Size) > Average (2D)*

To "hit" with a missile at Very Short range

(Ship Size) > Formidable (3D)

DMs:

- + (Target's thrust rating - missile thrust rating)
- Fire Control Rating
- Predict program DM (see below)
- + Evasion DM (see below)
- +/- Crew Gunnery DM

Success indicates that the missile's laser has hit the target, inflicting the appropriate number of damage points. Damage points are applied immediately. See (d) for detailed damage procedure.

(i) Evasion

Ships with the proper evasion software and a skilled pilot may use some of their thrust for evasive action, making the ship harder to hit. A military ship will have the program appropriate to its TL. The default Pilot skill level is 2, and the default modifier follows the fraction of pilot skill allowable for the various programs. The programs available are:

(TL9) Evade 1	Allows 1/4(FRN) of pilot skill to be used(0)
(TL10) Evade 2	Allows 1/2(FRN) of pilot skill to be used(1)
(TL11) Evade 3	Allows 3/4(FRN) of pilot skill to be used(2)
(TL12) Evade 4	Allows pilot skill to be used (2)

By sacrificing 1G of thrust, the ship may take advantage of the -DM, but the bonus may never be greater than the total G rating of the ship. Not even the most skilled pilot can do much with a tub that turns like a cow.

(ii) Predict Programs

Ships with proper predict software, which help anticipate the future course of a target, greatly simplifying the gunner's task. A military ship will have the program appropriate to its TL. The programs available are:

(TL10) Predict 2	+2DM for one target
(TL11) Predict 3	+3DM for one target
(TL12) Predict 4	+4DM for one target
(TL13) Predict 5	+5DM for one target

(d) Damage

Sandcasters may be employed to reduce damage before it is applied. A successful sandcaster hit reduces laser or NPAW damage by 1 point or a missile salvo by 1 missile. The defending ship fires any allowable number of sandcasters at each battery's or volley's hit, rolling once for all the potential

damage in it. The following task is used:

*To "hit" with a sandcaster
(7) > Average(2D)*

DMs:

The DM is based solely on range to the firing unit.

Range Band DM

Point Blank	+2
Very Short	+1
Short	0
Medium	-1
Long	-2
Extreme	-4

If the roll is successful, the damage, or number of missiles is reduced by the number of canisters used. If the roll is unsuccessful, the canisters are still used, as is their launch capacity from the vessel's sandcasters, leaving fewer to deal with future hits in the turn. Damage for all remaining hits are applied following the sandcaster roll, reducing first armor points, and then structure points when all armor has been eliminated. For a hit causing armor damage, roll once on that ship's external explosions table. For a hit causing structural damage, roll once on that ship's internal explosions table. If a hit damages both armor and structure, roll once on each table. (see below)

Sandcasters which have expended their ready supply of ammunition may replenish it from ship's stores (if carried) in two turns.

When a ship has no structure points left, it has totally lost structural integrity, and breaks up.

Damage Charts

(i) Generic Starship

External Explosions (2D)

- 2 - Internal Explosion - bypass armor
- 3 - Launch Capacity Hit - launch system destroyed
- 4 - Maneuver Drive Hit - loose 1G thrust rating
- 5 - Battery Hit - 1 offensive destroyed
- 6 - No Effect
- 7 - No Effect
- 8 - No Effect
- 9 - Battery Hit - 1 offensive destroyed
- 10 - Defensive Screen Hit - reduce screen or sandcaster by 3
- 11 - Spinal Mount Hit - inoperable
- 12 - Internal Explosion - bypass armor

Internal Explosions (2D)

- 2 - Bridge Hit - No maneuver, jump, jam, detect, screens; +1DM lock
- 3 - Fire Control Hit - All MFDs out
- 4 - Power Plant Hit - no maneuver, evade, jam, jump, e-weap., act sensors, screens; pass sensors +1DM
- 5 - Sensors Hit - no jam, detect; +2DM lock
- 6 - Battery Hit - 1 offensive destroyed
- 7 - No Effect
- 8 - Fuel Hit - no maneuver, jump; loose all fuel; roll again
- 9 - Crew/Passengers/Cargo Hit - 25% killed/destroyed
- 10 - Maneuver Drive Hit - loose 1G thrust rating
- 11 - Jump Drive Hit - no jump
- 12 - Ship Explodes

(ii) Generic Fighter/Small Craft

External Explosions (1D)

- 1 - Maneuver Drive Hit - loose 1G thrust rating
- 2 - Battery Hit - 1 offensive destroyed
- 3 - No Effect
- 4 - No Effect
- 5 - Battery Hit - 1 offensive destroyed
- 6 - Internal Explosion

Internal Explosions (1D)

- 1 - Pilot Hit - pilot killed/wounded
- 2 - Fire Control Hit - All MFDs out
- 3 - Power Plant Hit - no maneuver, evade, jam, jump, e-weap., act sensors, screens; pass sensors +1DM
- 4 - Battery Hit - 1 offensive destroyed
- 5 - Maneuver Drive Hit - loose 1G thrust rating
- 6 - Ship Explodes

If the ship in question doesn't have the listed system, treat it as No Effect.

(5) Vehicle Launch / Recovery

Small craft, fighters, and battle riders may be either launched or recovered in this phase in accordance to the launch rates of the "mother" ship.

Launched craft receive counters, and past and future position markers, in the same manner as missiles from step (c) of phase (4). Each launch facility may launch or recover up to six times its normal T4 launch rate over the course of a turn (6 craft per turn, with the exception of launch tubes, which may launch or recover up to 240[!!] craft per turn).

In order to land, the craft must have intercepted and matched courses with it's carrier. It must be in the same hex, and its future position marker must also lie in the same hex as that of the parent ship.

(6) End Phase

During the end phase, players take care of any necessary record keeping, and ships which qualify may disengage or jump.

To qualify to disengage, a ship must have a G rating equal to or higher than any opposing ship on the board. If the G rating is equal, then its velocity must be higher than any of the opposing ships. No enemy ships may be within weapons range, and no missiles may be targeted on the disengaging ship. The ship may also depart if the opposing player agrees to waive any or all of these conditions.

(a) Jump Drive

Jump capable ships past the 100 diameter limit may attempt to jump out of the system. The ship cannot have applied any thrust for the current turn, and must still have a functional jump drive by the end of the turn. It cannot have taken any structural damage during the weapons fire phase. The 100 diameter limit for planets will be printed in the center of the counter. For general purposes however, most planets have a 100 diameter limit of 24 hexes. The limit for gas giants may be generalised as approximately 240 hexes, meaning that if there's a gas giant on the playing surface - forget it !

Additional Sensor Modifiers (Optional)

Fired Beam	+0.5	+1	+0.5
Fired Missile	+0.5	0	+0.5
HEPlAR 1-2 G	0	+0.5	0
HEPlAR 3-20 G	0	+1	0
HEPlAR 21+ G	0	+1.5	0
Alert	0	+0.5	0
Battle Stations	0	0	0
Shadow	0	0	-2
Landed/Cammo	-2	-1	-1
Planet/GG	-0.5	-0.5	0
Atmosphere 6-7	0	-0.5	0
Atmosphere 8-9	-0	-1	-0.5
Atmosphere A+	-0.5	-1.5	-1
Atmosphere GG Upper	-1	-2	-1.5
Atmosphere GG Lower	-1.5	-2.5	-2.5
Atmosphere GG Deep	-2.5	-4.5	-4.5

Optional Modifiers

Fired Beam: Target fired beam weapons last turn.

Fired Missile: Target fired missiles last turn.

HEPlAR 1-2 G: Target used the indicated G rating using a HEPlAR drive.

HEPlAR 3-20 G: Target used the indicated G rating using a HEPlAR drive.

HEPlAR 21+ G: Target used the indicated G rating using a HEPlAR drive.

Alert: Target is aware that other vessels may be in the area.

Battle Stations: Target is aware that other hostile vessels may be in the area.

Shadow: Target lies in the shadow of a planet or asteroid.

Landed/Cammo: Target has landed on a planet or asteroid and camouflaged itself.

Planet/GG: Target is within one hex of a GG

Atmosphere #: Target is within the UPP coded atmosphere of a non-GG planet.

Atmosphere GG [__]: Target is at the indicated depth of a GG's atmosphere.

NOTE: The optional atmosphere modifiers are used in place of the basic modifiers. Do not combine them.

Crew Modifiers (Optional)

The crew for a ship are rated in both quality and skill. Quality is the equivalent of an attribute, and skill is equivalent to training in various tasks. This way a crew of characters can easily be integrated into the game. The crew quality and skill DMs are combined to give a general crew DM.

Crew quality has the same potential range as a character's primary characteristics, 2 through 15, though one would be hard pressed to find examples at either extreme of the spectrum. The larger an empire is, the larger pool of personnel they have to draw from for their military, and the better general quality of their crews. As conflicts draw on, empires may be forced to accept a lower quality individual to keep their ships manned. Crew quality is a number from 2 to 15, which then generates a DM. The DM is determined by subtracting 8 from the crew quality; the following categories are provided for reference.

<u>Quality</u>	<u>Attribute</u>	<u>Modifier</u>
Incompetant	5-	+3DM or more
Poor	6-7	+2 or +1DM
Average	8	0
Competent	9-10	-1 or -2DM
Excellent	11+	-3DM or "less"

Crew skill is rated in four areas, Ship Tactics, Pilot, Gunnery, and Sensors. For fleet engagements, Fleet Tactics is also used, but will only be noted for the flagship of the fleet. Various militaries are trained to different standards, often irrespective of the empire's size. As conflicts drag on, empires are often forced to curtail the training of their personnel. This, along with casualties among veterans, results in a lower general level of skill. Skill levels range from 1 to 6, which then generate a DM. The DM is determined by subtracting 2 from the skill level; the following categories are provided for reference.

<u>Quality Skill</u>	<u>Modifier</u>
Green	1- +1 or +2 DM
Average	2 0
Experienced	3 -1DM
Veteran	4 -2DM
Crack	5 -3DM
Elite	6+ -4DM or "less"

NOTE: Crew skill levels of 5+ will be extremely rare.

These two DMs are combined to find the total Crew DM for any given task.

Example: A crew quality of 6 combined with a sensor skill of 3 combines to give a +1 Crew DM.

To integrate Mayday with T4, simply substitute the character's attributes and skills into the appropriate crew DM calculation for sensors, starship tactics, gunnery, or pilot.

Mayday 3D (Optional)

As the Delta X equation works equally well up and down as it does for two dimensional movement, this system is easily adaptable for three dimensional movement. Assign the map a level of "Zero," and simply use markers to keep track of how far above or below the plane any given counter or marker is. Thus, if a ship's past position marker is in hex (0601,-1) and the present position counter is in (0604,1), the future position marker would be placed in (0607,3) before any thrust was applied.

Appendix A

(Taken from "Definitive Sensor Rules" by ©1998-1999 Bruce Alan Macintosh)

Signatures

A ship's active signature (Active Mod.) is calculated based on its surface area using the following table. A rough approximation of hull displacement ton equivalents is provided for those who have no way of determining the surface area of a pregenerated design.

<u>Surface Area</u>	<u>Signature</u>	<u>dTon Equiv.</u>
0.1-9m ²	-0.5	<1
10-999m ²	0	1-199
10 ³ -99999m ²	+0.5	200-99999
10 ⁵ -9999999m ²	+1	10 ⁵ +

EMM decreases radar signature by 0.5.

The passive emitted (Pass. IR Mod.) signature is calculated based on a ship's power plant output. For those who have no way of determining a ship's power plant output, use (Power Plant Rating x dTons / 2.)

<u>Power(MW)</u>	<u>Signature</u>
0-0.009	-2.5
0.01-0.09	-2.
0.1-0.9	-1.5
1 -9	-1
10	-0.5
100	0
1000	0.5
10 ⁴	1
10 ⁵	1.5
10 ⁶	2

Ships with Stealth reduce their emitted signature by 0.5. Ships with EMM reduce their signature by 1.0

The passive reflected (Pass. Vis. Mod.) signature is calculated based on a ship's surface area. Once again, a rough approximation of hull displacement ton equivalents is provided for those who have no way of determining the surface area of a pregenerated design.

<u>Surface Area</u>	<u>Signature</u>	<u>dTon Equiv.</u>
1-9m ²	-2	1
10-99m ²	-1.5	1-99
100-999m ²	-1	100-299
1000-9999m ²	-0.5	300-3999
10 ⁵ -99999m ²	0	4000-199999
10 ⁶ -999999m ²	0.5	200000-10 ⁶
10 ⁷ -9999999m ²	1.0	>10 ⁶

Ships with TL10+ EMM reduce their reflected signature by 0.5

These base signatures are for normal TL10+ starships, which are assumed to have "chameleon" hulls that can change color and pattern. In a combat situation the hull is adjusted to be as black as possible. Starships without this color-changing coating (i.e. TL9- ships, or civilian ships where the coating was not applied for economic reasons) increase their reflected signature by +1. TL8-9 ships with Stealth ignore this penalty.

Example: A TL-12 100 dTon scoutship with a spherical hull (surface area of 600 m²), and a power plant output of 150 MW has an active (Active Mod.) signature of 0. It has a reflected signature (Pass. Vis. Mod.) of -1, and an emitted signature (Pass. IR Mod.) of 0.

If the ship were equipped with EMM, the emitted signature (Pass. IR Mod.) would be reduced to -1.0, and the active (Active Mod.) and reflected (Pass. Vis. Mod.) would be -0.5 and -2.0 respectively.

Sensor Sensitivity

Passive sensors from the QSDS or SSDS can be converted to the new system using the following table:

<u>T4 Rating</u>	<u>Sensitivity</u>
<1	13
1-2	13.5
3-4	14
5-6	14.5
7-8	15.0

Active sensors from the QSDS or SSDS can be converted to the new system using the following table:

<u>T4 Rating</u>	<u>Sensitivity</u>
<1	11.5
1-7	12.0
8-16	12.5

LADAR sensors also the following table, but remember that LADARs cannot make new detection rolls, only reestablishing detection and locks.

<u>T4 Rating</u>	<u>Sensitivity</u>
<1	12.0
1-7	12.5
8-16	13.0

Appendix B

Missile Data

The following table provides some standard missile types. Any successful hit is sufficient to destroy a missile. All missiles use HEPIaR drives unless otherwise specified.

<u>Type</u>	<u>Size</u>	<u>G Rating</u>	<u>G Turns</u>	
Controlled	6	12	76	
Semi-independent	6	6	30	(14.5 Sensitivity, 10 hex range)
Fully Independent	6	6	32	(14.5 Sensitivity, 10 hex range)
Jammer	6	9	36	(Effective in same hex only)
Decoy Missile	(TBD)			

Appendix C

New Damage System (Under Development - DO NOT USE YET)

- Charts need to reflect %Surface area (for External) or %Internal volume (for Internal) from design process as closely as possible.
- Charts parallel size class with # of dice used (1D) for size 7, (2D) for size 8, (3D) for size 9, etc. to allow for larger # of systems.
- Give all components a hit value based on volume. A hit that destroys one component completely with damage left over rolls again for the next system hit.
- Damage control is task roll to remove one effect
[After sandcaster sequence]

After sandcaster fire has been resolved, if there are any hits still remaining, they will strike the vessel's armor, and possibly cause external and internal hits.

Laser fire is reduced by armor at a rate equal to its penetration value (FRU), so a laser with a penetration value of 1/7 which hits 20 points of armor has its damage reduced by 3 points before damaging ship's systems. Other weapons, excepting meson guns, have their damage reduced by the full value of the armor before damaging systems. Meson weapons are not reduced by armor, but may be reduced by screens.

Ships roll on the damage table which most closely corresponds to their size class and internal structure (i.e. a cargo vessel would roll on the appropriate sized freighter table, while warships would use military tables). A single roll determines hit location on both external and internal tables. When rolling on the chart, if the ship doesn't have the listed system, shift one result towards the center of the chart (marked with a •). If the ship does not possess that system, then treat the hit as Hull or Fuel. If that shot does internal damage, however, use the original die roll for determining internal location. When rolling on a subtable and the ship does not have the listed system, the defender may choose to adjust the roll either up or down until the result is valid.

Each result specifies how many hits a system can take, and the effects of hits insufficient to completely destroy the system.

If an internal system has been destroyed and there are still hits left to resolve, reroll on the damage table for the next system hit, and apply the remaining damage points to that system. Multiple systems, like sandcasters or offensive batteries, only have the listed portion destroyed before rerolling for the next system.

Damage Charts

Military Size 8 (2D)

<u>Roll</u>	<u>External</u>	<u>Internal</u>
2	Electronics (T)	Electronics (T)
3	Power Plant	Power Plant
4	Fuel Scoops	Purification
5	Drives (T)	Drives (T)
6	Hull	Drives (T)
•7	Hull	Fuel
8	Hull	Hanger
9	Offensive (A)	Offensive
10	Defensive (T, A)	Defensive (T)
11	Access (T)	Crew Area (T)
12	Internal Hits	Bridge

Electronics Subtable (1D)

<u>Roll</u>	<u>External</u>	<u>Internal</u>
1	Jammer	Jammer
2	Passive	Passive
3	Active	Active
4	MFD	MFD
5	Communication	Communication
6	Communication	Computer

() Drives Subtable (1D)

<u>Roll</u>	<u>External</u>	<u>Internal</u>
1	Maneuver	Maneuver
2	Jump	Maneuver
3	Jump	Maneuver
4	CG Lift	Jump
5	CG Lift	Jump
6	CG Lift	CG Lift

() Defensive Subtable (1D)

<u>Roll</u>	<u>External</u>	<u>Internal</u>
1	Sandcasters	Sandcasters
2	Screens	Screens
3	Screens	Screens
4	Screens	Screens
5	Screens	Screens
6	Screens	Screens

() Access Subtable (1D)

<u>Roll</u>	<u>External</u>
1	Airlock
2	Launch
3	Launch
4	Launch
5	Launch
6	Launch

() Crew Area Subtable (1D)

<u>Roll</u>	<u>Internal</u>
1	Corridor
2	Stateroom
3	Stateroom
4	Stateroom
5	Shops
6	Other

Each starship system has a number of hits required to degrade its performance (1 reduction), and a number of reductions it can sustain before destruction, in the format "x / y" (where x = hits per reduction and y = number of reductions to destroy). Thus, a power plant might be listed as 6 / 4, or a jump drive as 10 / 2. In general, each reduction degrades the performance of the system by a percentage corresponding to the number of reductions required to destroy the system. So the 10 / 2 jump drive above has its performance reduced by 50% with each reduction.

Damage Effects

- Active (External) 1 point destroys antenna (Internal) 1 point destroys one active sensor system.
- Airlock (External) 1 point destroys one airlock.
- Bridge (Internal) [Size - 5] points destroys bridge; hull breach.
- CG Lift (External) [Size - 5] points reduce the ship's CG rating by .5 G (Internal) [Size - 7] points reduce the ship's CG rating by .5 G; destroyed when CG rating reaches zero. External rating reduction does not effect internal rating.
- Communication (External) 1 point destroys antenna (Internal) 1 point destroys one communication system.
- Computer (Internal) 1 point destroys one computer
- Corridor (Internal) 2 points renders one corridor section impassable; hull breach.
- Fuel (Internal) 1 point reduces fuel by 28 m³; maximum [Size - 3] hits before rerolling location.
- Fuel Scoops (External) [Size - 5] points reduce scoops by 5% hull m².
- Hanger (Internal) [Hanger dTons/10] hits destroys hanger; hull breach.
- Internal Hits (External) reroll on internal table, bypassing armor.
- Jammer (External) 1 point destroys antenna (Internal) 1 point destroys jammer.
- Jump (External) [Size - 6] points destroy a portion of the jump grid, reducing the ship's jump range by 1 (Internal) [Size - 7] points reduce the ship's jump rating by 1; destroyed when jump rating reaches zero. External rating reduction does not effect internal rating.
- Launch (External) 2 points disables one launch facility.
- Maneuver (External) 2 points destroy one thruster plate, reducing the ship's G rating by [100%/(Size - 6)] (Internal) [Size - 4] points reduce the ship's G rating by 1 G; destroyed when G rating reaches zero. External rating reduction does not effect internal rating.
- MFD (External) 1 point destroys antenna (Internal) 1 point destroys one MFD system.
- Offensive (External) 2 points disable 1 battery or [Size - 3] points disable spinal mount (Internal) 5 points destroy 1 battery or [Size +2] points destroys spinal mount.
- Other (Internal) 1 point destroys Galley, Brig, Recreation room, Meeting room, or other crew related facility; hull breach.
- Passive (External) 1 point destroys antenna (Internal) 1 point destroys one passive sensor system.
- Power Plant (External) [Size - 7] hits destroy heat baffles, increasing IR Pass. signature by 1 (Internal) 1 hit reduces power output by 50 MW; destroyed when output reaches zero.
- Purification (Internal) [Size - 4] points increase purification time by 1 hour; destroyed when time reaches 12 hours.
- Sandcasters (External) 1 point destroys ports for 2 sandcasters (Internal) 1 point destroys 2 sandcasters)
- Screens (External) [Size - 6] points reduce screen rating by 1 (Internal) [Size - 6] points reduce screen rating by 1; destroyed when screen rating reaches zero. External rating reduction does not effect internal rating.
- Shops (Internal) 1 point destroys Engineering shop, Machine shop, Sickbay, or other repair facility; hull breach.
- Stateroom (Internal) 1 point destroys one stateroom; hull breach.

Appendix D

Comments

- "ShipSheet" design should have graphic representation of damage
- Possibly add modifier for large numbers of missiles coordinating attacks for bonus.
- Look for possible TL bonus DMs.

Tactics

Design Notes

- Now that T4.1 uses FFS2 ranges and material, I've drastically rewritten to make use of all the new toys.