RENEGADE TECH 2.0
AEROSPACE COMBAT

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THANKS TO:

Firstly, to all the people at FASA for creating and publishing *BattleTech* and *Renegade Legion*, the games and universes we love so much and which bring us to this document; also to FanPro and then Catalyst Games Labs, for keeping *BattleTech* alive and flourishing, despite the vagaries of fate.

Next, to Francis Greenaway, for crafting the first edition of *Renegade Tech*, doing so much to expand and polish the rules over the years, then choosing to pass the developer's torch to me. And, of course, to everyone who played that generation of *Renegade Tech* and gave feedback, for your input helped hone the system into what it became.

Finally, to Josh, Brian, and Agustín, for letting me red-shirt them in the examples. I hope you jokers enjoy the fame while it lasts....

SOURCES:

By FASA/FanPro/Catalyst Games Labs:

Total Warfare, *Tech Manual*, *Tactical Operations* and *Strategic Operations*. *Total Warfare* is the basis of the modern *BattleTech* game, and as such the *de facto* basis for these rules; all alterations to game-play made in these rules are assumed to be deviations from those in *Total Warfare* or the other books in that series.

Interceptor 2.0, the fighter combat game of the *Renegade Legion* series, and to a lesser extent *Centurion*, the armoured-vehicle ground-combat game. The official rules for *Interceptor 2.0* can be found at http://www.madcoyote.com/renleg/int/int.htm.

By Cheap and Tacky Backyard Productions:

The first edition of *Renegade Tech* forms the basis for most of these rules. Even on points where my own sense of 'realism' has prompted me to make alterations, the original *RT* informs almost everything I have done.

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DEVELOPER'S FOREWORD, SECOND EDITION

Renegade Tech, Second Edition is a variant graphical damage resolution system for BattleTech, based on the games *Interceptor 2.0* and *Centurion*, part of the *Renegade Legion* system of games by FASA. In this system, weapons do differing styles of damage, and each weapon has a unique damage template that is applied to a unit's armour, which is also changed in layout to account for this.

I believe I first came across the original *Renegade Tech* pdfs in 2008, though it may have been rather earlier; certainly I fell in love with the concept as soon as I read it. As much as I enjoy the baseline game of *BattleTech*, one of its core conceits is perfectly ablative armour, and though I'm just an armchair expert on military hardware, I've always found that particular conceit to strain my suspension of disbelief. By importing the 'damage template' system from *Renegade Legion*, *Renegade Tech* redressed that issue in a colourful and exciting way, introducing a degree of uncertainty and verisimilitude to damage-resolution which revitalised my sense of how battles were resolved on the tabletop.

That being said, as time went on I realised that I had some issues with *Renegade Tech* itself, and again they boiled down to 'verisimilitude' and 'game balance'. Laser-templates in *Renegade Legion* were narrow but deep, allowing one unit to 'ice-pick' another to death in one or two hits if the player was lucky enough, and this carried over into *Renegade Tech*. I have nothing but respect for Francis Greenaway and all those who helped him refine the First Edition over the years, but I feel this was a mistake on both the 'realism' and 'balance' fronts. Balance-wise, leaving all energy-weapons as ice-picks meant that they would become the primary weapon on almost every unit, limited only by heat issues, and all of those units which favoured ballistic or missile weapons would be more or less obsolete; the disparity only gets worse as tech-levels rise and double heat-sinks become more common. Realism-wise, this concept of beam-weapon damage meant lasers sharply limited the efficacy of BattleTech armour, which would have prompted engineers and designers in-universe to discard it in favour of something more durable at the first opportunity.

In light of these issues, and another personal project which made me look at the effectiveness of 20th- and 21st-century weapons against *BattleTech*'s 29th-century armour, I went back to the drawing-board, examined the implicit assumptions underlying the existing damage-templates, reassessed them in light of *BattleTech* fluff and 'Word of God' statements by the BattleTech developers, then made a number of changes in the templates and other mechanics of *BattleTech* weapons, based on a more-or-less consistent standard of what a single 'box' of damage actually represented.

In combining those changes with the existing *Renegade Tech* rules-set, which builds on *BattleTech* gameplay mechanics, I hope that I've created a game-variant that is as fun as *BattleTech*, if not more so, while adding a new and exciting element, a greater feeling of realism, and solid reasons for the existence and use of the full range of 29th-century weaponry. This document represents the end result of that development — at least, so far!

Feel free to try this out, and any feedback or questions about why I did it the way I did or whatever are welcomed — e-mail to:
Danyel Woods (Matryoshka01@gmail.com); please include [RTech] at the start of your subject-line.

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Note: Using this system will change the flavour of the game somewhat. For a start, as all damage is not the same, you have to make some decisions about which weapons will fire first, which can make all the difference to the target, especially when the target is already damaged. Still, I don't believe that the game will be any less enjoyable — quite the contrary, in fact!

Games will usually take about the same amount of time to play, although depending on how lucky you are with the placement of damage, games can be over quite quickly.

This rulebook and the accompanying Record Sheet file are all you need to be able to use this alternate damage system. If playing outside of 3025 tech, then a copy of the Weapons Book may also be useful as it contains the templates for a large number of weapons and ammunition options found in current *BattleTech* supplements.
Of course, a copy of *BattleTech* is still needed to be able to play.

DESIGNER'S NOTE: AEROSPACE RULES
As stated, these are most definitely a work-in-progress, so feedback is most definitely wanted and expect things to change when feedback starts to flow back. A working knowledge of standard Renegade Tech concepts is required, as is of aerospace combat under *Total Warfare*, *Tactical Operations*, and *Strategic Operations*.

There are examples and diagrams, but nothing fancy - be warned!

One thing to note is that the larger the vessel, the more 'broken' this system gets – you'll find that the armour rows for even a 200 ton Battle Taxi can get a bit overwhelming.

When using *Total Warfare* aerospace rules, it is best to use a small amount of craft — my recommendation is that each side field a single flight of up to six fighters/small-craft, perhaps with support from a single DropShip/GunShip. Conversions are provided for using squadrons of fighters against DropShips, and squadrons/DropShips against capital-scale vessels, but these have not been play-tested. Again, it is not recommended that either side field a large number of squadrons/vessels! (And personally, I would recommend against fielding either the *Mjolnir* or the *Quixote*: the former has ridiculous amounts of armour, and the latter can throw so many nuclear-tipped missiles at a target that you'd be rolling dice all day to resolve a single salvo.)

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SPACE COMBAT PREFACE

Although the environment does not present the same interference to weapons-fire in vacuum that it does in ground combat, the incredible speeds involved in aerospace combat, as well as the relative limitations of their fire-control systems, mean that aerospace fighters suffer from sharply reduced 'hex' ranges compared to baseline BattleTech gameplay. Machine-guns, conventional autocannon, and internally-launched missiles like LRMs and SRMs have projectile velocities which are simply too low for effective use against other aerospace systems; they are usually found only on ships intended for dedicated surface-strike duties, or are used as point-defence systems (see below). Even energy weapons and mass-driver weapons like the Gauss Rifle find their effective ranges severely curtailed in aerospace-to-aerospace combat, but energy weapons have an effective 'look-see-hit' capability, and while mass-drivers require significant 'deflection-shooting', they are the only solid-shot weapons with velocities high enough to be effective at meaningful ranges.

Thusly, the preferred weapons of fighter-to-fighter space combat are energy weapons, Gauss-principle weapons, and the external-ordnance missile (see below).

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	CONVENTIONAL BEAMS				CONVENTIONAL GAUSS			
	SHORT	MEDIUM	LONG	EXTREME	SHORT	MEDIUM	LONG	EXTREME
Small-craft	3	6	9	12	2	4	6	-
DropShips	4	8	12	16				
Capital Ships	5	10	15	20				
	CONVENTIONAL AUTOCANNON				CONVENTIONAL MISSILES			
	SHORT	MEDIUM	LONG	EXTREME				
Small-craft	-	1	2	3	-			
DropShips	-	1	2	3				
Capital Ships	-	1	2	3				

	'XO MISSILES'	SUB-CAPITAL WEAPONS	CAPITAL WEAPONS
Small-craft	By missile type	-	-
DropShips		By individual weapon	By individual weapon
Capital Ships			

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AEROSPACE FIGHTERS

Carrying armour and firepower comparable (or superior) to a BattleMech's, aerospace fighters can fight with equal potency in the depths of space or in the atmosphere over planetary battlefields. Unless they carry nuclear-tipped missiles, they cannot match the kiloton-range throw-weights of capital weapons, but this is exactly the point of their use: they can do the precise, 'low-collateral' damage needed for tactical operations, destroying ground targets while leaving key objectives intact, or crippling DropShips for capture. Their combination of mobility and firepower is also crucial to naval tactics, allowing them to quickly reinforce a task-force's defensive perimeter at key points and times.

CONVERSION GUIDELINES: AEROSPACE FIGHTERS

Aerospace fighters are the core unit in *Total Warfare* Aerospace combat, so understanding how to fill out their armour diagram is important.

Each aerospace fighter has 4 hit locations - Nose, Left Wing, Right Wing, Aft.

Each location has an amount of Internal Structure rows equalling to the following table + 1 line per 5 SI points (or fraction).

AEROSPACE FIGHTER INTERNAL STRUCTURE			
TONNAGE	**NOSE**	**WINGS**	**AFT**
20-25	1	0	0
30-35	1	1	1
40-50	2	1	1
55-65	3	1	2
70-75	4	2	2
80-90	5	3	3
95-100	6	4	4

Use Armour Values as per vehicles (armour value / 4, round up).

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For example:
A 20-ton SYD-Z1 Seydlitz *(SI 11) has 4 Nose, 3 Wing and 3 Aft Internal Structure rows; it has 3 Nose, 2 Wing and 3 Aft Armour rows.*

A 40-ton S-4 Sai *(SI 8) has 4 Nose, 3 Wing and 3 Aft Internal Structure rows; it has 9 Nose, 8 Wing and 7 Aft Armour rows.*

A 100-ton Thunderbird *(SI 10) has 8 Nose, 6 Wing and 6 Aft Internal Structure rows; It has 20 Nose, 13 Wing and 10 Aft Armour rows.*

Each location must mount all equipment within the Internal Structure of the vehicle.

Ammunition:	Each ton of ammunition takes up 1 critical slot. Where this is actually allocated is up to the player, although it is usual for it to be in the same location as the weapon it feeds.
Avionics:	The Nose and each Wing must allocate 2 critical slots to Avionics.
Crew:	The Nose must allocate 1 critical slot to Crew.
Engine:	The Aft must allocate 4 critical slots to Engine.
FCS:	The Nose must allocate 3 critical slots to FCS.
Fuel:	Fuel must be allocated at 1 critical slot per 40 points of Fuel. Unlike normal critical slots, Fuel critical slots are only 1 internal square in size. This can be allocated to Wings or Aft.
Gear:	The Nose and Wings must allocate 1 critical slot each to Gear.
Heat Sinks:	Each heat sink takes 1 critical slot (or more for double heat sinks), allocated anywhere. A fighter must allocate an amount of heat sinks equalling: Total Heat Sinks - (Engine Rating /25). Round Down.
Sensors:	The Nose must allocate 3 critical slots to Sensors.
Weapons:	Each weapon takes up an appropriate amount of critical slots in the relevant location.

Thrusters:

You'll notice that for aerospace fighters, thrusters are not listed on the armour diagram. This is because as far as I can see, fighters cannot get their thrusters damaged by critical damage, so I left them out. If this isn't the case and I've made a mistake, then could someone point this out to me!

In addition, all other equipment must be allocated at the normal amount of critical slots in the relevant location. Bombs are not placed on the critical chart.

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A **Critical Slot** is an area of two internal squares. Weapons and the Engine must have their critical slots adjacent to each other, other items don't. When an item is hit, it is only effected if a critical slot is hit. Multiple hits to the same critical slot do not confer any additional penalties — different critical slots must be hit for further effects to take place.

There may come a time when not all components will fit inside the available internal structure. If this is the case, then halve the size of all critical slots for the most common item. If there still isn't enough space, do this again for the next most common item. Reducing a critical slot means it now only takes up one internal square per slot. The actual amount of slots stays the same. If there is more than one item with the most critical slots, the owner may decide which gets reduced.

> *For example:*
> *The SYD Z2 Seydlitz cannot fit all the medium lasers into the nose because of a lack of space. In this case, the most common item can have its critical slot size reduced. As the Nose now has three items which take up three critical slots (Sensors, FCS and the medium lasers), we decide to reduce the FCS in size. This means that each FCS critical slot now only takes up 1 square instead of the normal two, and this frees up enough space to allow the three medium lasers to fit.*

Missile Launchers:

As noted in the Preface, in this system LRM and SRM launchers are next to useless in deep-space combat. Players converting aerospace fighters or small-craft (q.v.) that mount such launchers will need to decide if the design is meant more for air-to-surface strikes (where these weapons will be effective against ground units) or aerospace combat. Designs meant for aerospace combat will need to replace their SRM or LRM racks with other equipment, probably including XO pylons (see below).

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SMALL CRAFT

'Small-craft' is a broad category of parasite-craft that takes in cargo and personnel-transfer shuttles (often used as rescue craft), light assault-landing craft, sensor-picket vessels, and even dedicated combat-shuttles like the predecessors of modern aerospace fighters. (Indeed, many commentators do not bother with the distinction and lump such trans-atmospheric fighters into the small-craft category.) While generally not as agile as fighters, many small-craft are still valuable in an aerospace battle, providing improved sensor capabilities that the smaller craft cannot match, rescuing stranded pilots, and in some cases acting as missile-launch (and missile-defence) platforms to support either fighters or larger craft such as DropShips, GunShips, or even full-scale WarShips.

CONVERSION GUIDELINES: SMALL CRAFT

Small craft come in two sizes - up to and including 100 tons, and 105 to 200 tons. The rules for filling out both are slightly different.

Small Craft (05-100 tons):

Small craft of this size are treated exactly like aerospace fighters (see above), only with some additional equipment - as listed below.

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Small Craft (105-200 tons):

Larger small craft are handled slightly differently. The main change is that these small craft have double the size of their armour and internal — this makes the location 12 boxes wide.

The amount of internal structure is slightly reduced in addition. A craft has an amount of internal structure rows equalling the following table amount + 1 line per 5 SI points (or fraction) that the craft has.

SMALL-CRAFT INTERNAL STRUCTURE			
TONNAGE	**NOSE**	**WINGS**	**AFT**
105-125	4	2	2
130-150	5	3	3
155-175	6	4	4
180-200	7	5	5

A small craft of this size has an amount of armour rows equalling that of vehicles (total location armour/4, rounded up); this value is then divided by 2, and then 1 is added to the result. Round all results up.

For example:
A 150 ton Landing Craft Mark VII (150 tons, SI 6) has the following internal structure: 6 rows to the nose, 4 rows to the left and right sides and 4 rows to the rear. The amount of armour rows is equal to 15 rows for the nose, 6 rows to the left and right side and 7 rows to the rear.
The NL-42 Battle Taxi (200 tons, SI 9) has 9 internal structure rows to the nose, 7 rows to the left and right side, and 7 rows to the aft. It has 32 rows of armour to the nose, 13 rows of armour to the left and right side and it has 16 rows to the rear.

All equipment and weapons must fit inside the internal structure of the vehicle as normal, but remember that the larger size has 12 columns for placing items.

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Internal Equipment:

All small craft carry the same amount of equipment as an Aerospace fighter. But in addition, small craft must mount some other items.

Cargo:	1 critical slot must be allocated per five tons of cargo the vessel carries. This must be placed in the left or right side of the vessel, being balanced as much as possible.
Crew:	The Nose must allocate 2 critical slots to Crew.
Docking Collar:	The docking collar takes up 1 critical slot in the aft of the craft.
Doors:	A small craft must allocate 2 critical slots to the left and right side of the craft.
Engine:	A small craft of 100 tons or under must allocate 6 critical slots to the aft of the craft. A larger small craft must allocate 8 critical slots.
K-F Boom:	The vessel must allocate 1 critical slot in the nose to the K-F Boom.
Life Support:	1 critical slot must be allocated to the life support and placed in the aft of the vessel.
Thrusters:	The left and right side of the vessel must allocate 4 critical slots to thrusters.

Passengers are not included in the internal structure as they are not damaged in Aerotech 2.

If the small craft doesn't carry cargo, then it doesn't need to place cargo or doors in the internal structure.

If the small craft doesn't have facilities to dock with a jump ship, then it doesn't need to place a K-F Boom or docking collar.

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EXTERNAL ORDNANCE

Fighters and combat shuttles typically carry a number of missiles as 'external ordnance', either on normal 'bomb' stations (which impact on performance) or in dedicated internal bays known as 'XO pylons' (which do not impact the fighter's performance, but are often limited in number).

XO missile attacks are made in the Movement phase, at any point where the attacking fighter is within missile-range of the target unit(s) and has the target(s) within its forward fire-arc; a pilot may fire a maximum of six missiles per turn, divided between valid targets as they see fit. The missile launch(es) are declared, and with the defending player watching, a token representing the missile(s) is moved across the game-board, through any hexes the attacker chooses along the flight-path (so long as the number of hexes does not exceed the missile's range) and stops in a hex adjacent to the target. Defensive fire is resolved (see below), and any surviving missile(s) attack the target, using their Intelligence rating as their base Gunnery score and modifying the to-hit roll for ECM protecting the target (see also *Fighter Decoys*, below).

Standard and heavy XO pylon

(Used by: SLDF, Successor States and their clients, Near Periphery powers and their clients)

	INTRODUCTION DATE (INITIAL TYPE)	SIZE OCCUPIED (BOMB SLOTS)	SIZE OCCUPIED (WEAPON SLOTS)	MASS (TONS)	CAPACITY (BOMB SLOTS)
Standard XO Pylon	2523 (LCF-R15 *Lucifer*)	1	-	0.5	1
Heavy XO Pylon	2768 (SL-15 *Slayer*)	5	1	2.5	6*

A fighter can only mount as many XO pylons as it could carry bombs conventionally, e.g. a 50t *Lightning* can be modified to carry XO pylons, but only to a maximum of ten. XO pylons do not allow a fighter to exceed the bomb-load it could carry under *TW* rules; they only allow the fighter to carry such ordnance without suffering decreased performance. Fighters mixing pylon stores and 'normal' external stores accrue Thrust penalties as if they were carrying only the normal stores, e.g. a *Stingray* with four pylons can carry four missiles without affecting its performance, but loading one more missile would incur a -1 Thrust penalty.

'Heavy' XO pylons each mass 2.5 tons and take up one 'weapon' slot in the nose or wing arcs (wing-mounts must be balanced); they can accommodate up to six 1-slot items, three 2-slot items, two 3-slot items, a single drop-tank holding 240 points of fuel, or a single 'heavy weapon' like the Remora-IV. These are fixed combinations: mass-distribution problems mean that Heavy XO pylons may *not* mix-and-match the ordnance they carry. Mixing the use of standard and heavy XO pylons allows craft to carry more ordnance than their normal bomb-limits, but only within the total capacity of their pylons.

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'Bomb' critical hits against standard or Heavy XO pylons render the pylon's stores unuseable for the remainder of the scenario; however, unlike normal bomb pylons, battle-damaged pylons do *not* cause aerodynamic penalties for atmospheric re-entry under TW rules. XO missiles may be used as part of an air-to-ground Strike attack, subject to the maximum salvo-size established above.

For example:
Agustín is designing a medium aerospace fighter, the F-90(m) Stingray*. As a 60 ton craft, it can carry a maximum of 12 bombs or pylons. Deciding that the* Stingray *is meant for aerospace-superiority first, with a secondary aerospace-/ground-attack capability, he chooses to equip it with one heavy XO stanchion (using 2.5 tons of mass, one weapons-slot in the nose, and five bomb-slots) and four standard XO pylons (at half-a-ton and one bomb-slot each), for a total mass-cost of 4.5 tons. This allows the* Stingray *to carry ten 'points' of ordnance without affecting its thrust-curve, or supplement this load with three more items at a -1 penalty to its Safe Thrust.*

A typical warload for an F-90(m) Stingray *on an anti-shipping strike would consist of a single Remora-IV anti-ship missile on its heavy pylon, four Manticore anti-fighter missiles on its standard pylons, and three drop-tanks (120 points of fuel) in 'normal' bomb-slots. The drop-tanks limit the F-90(m)'s thrust to 6/9, but when those have been jettisoned, it can utilise its full 7/11 thrust while still carrying its Remora-IV and Manticores.*

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SMALL-CRAFT COMBAT

Combat is handled pretty much as normal under the *Total Warfare* and Renegade Tech rules.

Ballistic Weapons

While they may be used in *atmospheric* combat without any special issues, *Total Warfare* limits a lot of the special munitions that many weapons may use. If you go with that, then autocannon and missile launchers may only use normal munitions. Alternately, you may decide beforehand what weapons should be able to use special ammunitions — effectively only some missile loads should be limited (loads like Inferno and smoke for example).

Further, the problems cited in the Preface mean that direct-fire autocannons are almost useless in space-combat. If a craft armed with these weapons attempts to use them, they should be resolved as LB autocannon attacks (Margin of Success/Failure applies to a Cluster Hits roll, each hit is a separately-resolved RC/1 or RC/2 template). SRM or LRM launchers can only be used for Defensive Fire (q.v.).

Hit Location

The standard aerospace Hit Location table from *Total Warfare* is used, but for the most part, ignore the critical hits from the table.

Damage Thresholds

If the damage from a weapon attack is equal to the damage threshold of the armour location, then 1 point of internal structure damage is placed on the armour diagram as per the Optional Critical Location rule found in *Renegade Tech*. This effects the first internal structure square so it may not automatically cause critical damage.

Bombs and Control hits are handled as per normal *Total Warfare*. Because these aren't placed on the standard armour diagram, they only take effect if they are rolled on the hit location table and a standard damage threshold roll is made.

Crew take one point of damage when a damage threshold is made on their location, the damage isn't recorded on the armour diagram.

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Rolling a 12

If a lucky hit is rolled (a natural 12 on the to-hit roll), then this scores 1 point of internal structure damage as per Damage Thresholds above.

Structural Damage

Units in Aerospace 2 do not take SI damage. Instead, all damage is applied directly on the armour diagram. Because all components are placed on the diagram, they can be damaged as normal Renegade Tech rules.

Critical Hits

As stated, components are not damaged from the hit location table (exception: when using the Optional Critical Location rule, critical hits can apply), but when items are damaged on the armour diagram they are damaged as normal.

Critical Slots

All components on the armour diagram are in critical slots, assigned when the aircraft is built. While a critical slot is usually 2 internal structure squares in size, it can only give one damage effect. For example, if an Engine critical slot is hit, but only scoring one square damage, then the engine critical is in effect (causing +2 heat per turn and reducing Safe Thrust by 2). If another square of damage was inflicted on that critical slot, there would be no additional effects because they have already taken effect. This means that you cannot destroy a craft's Avionics totally by Nose hits because only 2 Avionic critical slots are stored there.

Bombs

Bombs are not placed on the critical chart, they can only be destroyed by damage threshold rolls on the hit location table.

Control Rolls

Like bombs, these only take effect from the hit location table.

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Crew

For pilots of small craft and aerospace fighters, the Crew damage is handled differently. A pilot takes 3 points of damage if one box of the Crew critical slot is crossed off. The pilot and crew are killed when the critical slot takes 2 squares of damage.

Fuel

When a fuel box is hit, the craft loses a percentage of its remaining fuel equalling to the following formula:

Fuel Lost % = 100 / Total Fuel Boxes (round down)

This assumes that fuel is being from all tanks on the craft to greatly simplify record keeping.

For example:
A Z1 Seydlitz *has its fuel tank hit in combat. It has 180 remaining fuel points. With the loss of one fuel box, the craft loses 16% of it's remaining fuel, or in this case 28 points of fuel. (The* Seydlitz *has 6 fuel boxes on the armour diagram; 100 / 6 = 16% (rounded down), and 28 is 16% of 180 (again, rounded down).*
A Thunderbolt *is hit in combat and its fuel tank holed. It has only 80 points of fuel left. It now loses another 8 fuel points. (100 / 10 = 10; 10% of 80 = 8).*

Small Craft of 105+ tons

Small craft of over 100 tons have an armour diagram that is 12 columns in width. Whenever a craft of this size gets hit in combat, roll for the hit location as normal, but before determining a centre point, roll 1d6. On a 1-3, the first six columns have been hit, and on a 4-6 the second six columns have been hit. Once this has been determined, then a centre point can be fixed and damage can be done normally. Template damage can cross anywhere in the 12 column armour diagram.

Destroying a vehicle

An aerospace vehicle (fighter, small craft or DropShip) is destroyed if any damage passes through the internal structure rows and into the 'Destroyed' section. A craft can be destroyed in this way from any location.

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Missile Attacks

An attack with XO missiles must be declared during the *movement* phase, at any point along the launching craft's movement, but may only be declared against targets which are within the small-craft's Nose firing-arc and the range of the missile(s) being fired; a small-craft cannot launch a missile attack while using Evasive Action (*Total Warfare* p.77), against a target that is outside the range of its missiles, or against a target that lies outside its Nose arc. A given small-craft may launch up to six missiles per turn, divided between valid targets as the controlling player sees fit. A token representing the craft's missile(s) should be placed on the game-board in the hex adjacent to the launching craft's Nose.

Once all other fighters and small-craft on the game-board have moved, players take turns, in initiative order, moving their missile-tokens from their starting-points towards their targets along the shortest valid path between the two points. When the missile-token reaches the hex adjacent to the target, the target may resolve its Defensive Fire (see below) and launch any Missile Decoys (see below) that the controlling player wishes. Once this is done, the attacking player makes a To-Hit roll, using the missile's Intelligence as their Gunnery skill and adjusting for ECM and ECCM as normal. If the roll succeeds, the missile hits and damage is resolved as normal; naturally, if the roll fails, the missile misses.

Defensive Fire

Point-defence-equipped machine-guns may attempt to shoot down hostile missiles that enter or pass through their fire-arc. Owing to the velocities involved in aerospace combat, this is not a simple matter: each PDMG must make a To-Hit roll using a Gunnery skill of 6, modified by the missile's ECM. A hit indicates that the missile is destroyed harmlessly short of its target. A single PDMG may attempt to destroy up to six missiles in a given turn, but a given PDMG can only engage a given missile once. No matter how many or few missiles a PDMG engages in a given turn (within the above limit), it expends only five bursts of MG ammunition per turn.

Small-craft lacking dedicated PDMGs may also use other weapons in an attempt to destroy incoming missiles, but destroying a missile requires the pilot to make a successful To-Hit roll using their own Gunnery skill at a +4 penalty (further modified for ECM). Each such weapon may only make one such defensive-fire attempt during a given turn; weapons to be used in such a fashion must be declared during the missile attack and thus are not available for offensive use during the Weapons Attack Phase, though they build heat (and/or expend ammunition) per their normal rules.

XO missiles may be used in an attempt to shoot down incoming missiles; in this case, use the missile's Intelligence in place of the craft's Gunnery skill and apply the missile's ECM and ECCM ratings to the ECM environment.

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Missile Decoys

When attacked by hostile missiles, a fighter or small-craft may launch as many as three decoys in a turn. Each decoy launched provides the unit's hex with the equivalent of one (1) point of defensive ECM coverage for the duration of the turn in which it is launched. This is considered Small Craft ECM, having no effect on attacks from Large Craft; however, ECM from decoys *is* cumulative with ECM from other sources, allowing it to exceed the normal limit of +4.

All fighters and small-craft are considered to carry one free six-shot rack of decoys for every 25 tons of their mass (round up). Additional racks of decoys may be added during construction – treat each rack as an Aft-mounted VGL loaded with decoys; these VGLs *can* be used in space-based combat – or carried as external ordnance, taking up one bomb-slot (or pylon) for each rack.

Air-to-surface Attacks

Strafing and Strike attacks are resolved as normal under *Total Warfare* and *Renegade Tech* rules, using the weapon-templates contained in this document.

External ordnance rocket-pods and missiles may be used as part of a Bombing attack. Rocket-pods carried and used in such a fashion are treated as RL/OS/10 pods (normal Bombing attack, but apply MoS/MoF to a Cluster Hits roll on the '10' column for each rocket-pod fired and resolve that many rocket-templates). XO missiles attack using their Intelligence rating instead of the pilot's Gunnery Skill, modified only by the terrain in the hex occupied by the target and by any Ghost Targets/ECM/decoys covering that hex (the missile's ECCM rating may negate this coverage), and apply the normal missile-template for any hits. These missiles can be shot down by any point-defence systems carried by the target unit or covering its hex, but naturally those systems are not available for defensive fire during the resolution of ground-combat.

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STANDARD SMALL-CRAFT MISSILES

ATM/34A "Manticore" aerospace missile
(Service entry-date: 2749)
(Used by: SLDF, Successor States and their clients, Near Periphery powers and their clients)

	PYLON SIZE	INTELLIGENCE	ECM/ECCM	RANGE	DAMAGE (FIGHTER)	DAMAGE (DROPSHIP)
ATM/34A "Manticore"	1	5	+1/-1	12	18	1*

Introduced shortly before the death of Simon Cameron, the ATM/34A was the latest generation of a lineage dating back to the Age of War and quickly became the standard aerospace missile deployed by the SLDF, the Great Houses, and the Territorial Periphery States, seeing extensive service on both sides of the Amaris Civil War. Unwilling to risk breaking such a reliable and proven design in the middle of a military crisis, most nations have elected only to update the Javelin's target-discrimination software since the outbreak of the (First) Succession War. Although the performance specifications of its '480/30' fusion-motor - 480m/s^2 for thirty seconds – are relatively unimpressive compared to those of modern capital missiles, they still make the ATM/34A one of the best weapons currently available to aerospace fighters and combat shuttles.

The Manticore, or its respective national equivalent, is the preferred weapon of all front-line military forces. The Cameron Act of 2650 (as amended in 2752) barred 'civilian' users (like mercenary formations) from using such advanced weapons, instead restricting them to older weapons like the ATM/22A "Griffin" and ATM/28C "Minotaur" (q.v.), but the restrictions were often indifferently-enforced. In the post-Coup period, the availability of such advanced weapons to mercenary and other 'civilian' users varies from state to state. Moreover, for various reasons some smaller or less-advanced powers continue to produce weapons of even older vintage; these are detailed in the 'Primitive Aerospace' document.

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ATM/28C "Minotaur" aerospace missile
(Service entry-date: 2682)
(Used by: SLDF, Successor States and their clients, Near Periphery powers and their clients)

	PYLON SIZE	INTELLIGENCE	ECM/ECCM	RANGE	DAMAGE (FIGHTER)	DAMAGE (DROPSHIP)
ATM/28C "Minotaur"	2	5	+1/-	12	18	1*

Superseding the famed Griffin/Medusa pairing, the Minotaur used a new-generation 480/30 drive that allowed a significant improvement in the seeker-head. Although transitioning to a single missile-type made economic and logistical sense, many commanders and pilots were dubious of the reduction in overall ordnance-loads inherent to a pure inventory of Minotaurs and quietly hung on to stocks of the trusty Griffin as backup weapons. (Contrariwise, few pilots mourned the decommissioning of the 'idiotic' ATM/23.)

ATM/22A "Griffin" aerospace missile
ATM/23C "Medusa" aerospace missile
(Service entry-date: 2559 for both)
(Used by: THAF, Inner Sphere States and their clients, Near Periphery powers and their clients)

	PYLON SIZE	INTELLIGENCE	ECM/ECCM	RANGE	DAMAGE (FIGHTER)	DAMAGE (DROPSHIP)
ATM/22A "Griffin"	1	6	+1/-1	6	18	1*
ATM/23C "Medusa"	2	6	-/-	10	18	1*

Introduced soon after the Treaty of Geneva and used by all sides of the Reunification War, the Griffin and Medusa missiles were arguably the war's biggest killers of fighter-pilots. Combining a compact 360/30 drive with the latest generation of seeker technology, the Griffin was most pilots' preferred 'dogfighting' missile; using a more powerful but heavier 480/30 powerplant, the Medusa had less room for 'smarts' and was never as highly favoured as its lighter colleague, but significantly outranged most other fighter-weapons of the day. Coming soon after the Lyran Commonwealth had introduced the *Lucifer* medium fighter and its revolutionary new 'XO pylon' construction-techniques (which soon proliferated to all of the known powers), the two missiles were destined to become legends within living memory, with countless news-stories from the front lines etching their names into the public consciousness. Less glamourous, but arguably more decisive, was their use as point-defence on most DropShips and capital vessels, where they protected untold vessels from capital-missiles and reaped bloody harvests among attacking fighter-units.

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'Remora Mk.IV' (Arrow-IV Anti-Ship Missile)
(Service entry-date: 2698)
(Used by: SLDF, Successor States and their clients, Near Periphery powers and their clients)

	PYLON SIZE	INTELLIGENCE	ECM/ECCM	RANGE	DAMAGE (DROPSHIP)	DAMAGE (CAPITAL)
Remora-IV	6	5	+1/-1	12	9 (or nuke)	- (or nuke)

Many commentators say that aerospace fighters are useful only for air-shows, piracy, point-defence, and the kind of orbit-to-surface strikes that *don't* involve flattening entire cities with thermonuclear energies. In defiance of such received wisdom, the Remora-IV Anti-'Ship missile allow fighters to make a meaningful contribution to anti-shipping actions and strikes against space-stations — although even the Remora AShM can threaten a capital WarShip only if its one-ton high-explosive warhead is replaced with a Mark.83 (Type-IIIa/'Santa Ana-A') 'physics package'. The latter option makes many fighter pilots *very* grateful that the Remora's targeting software is too optimised against larger targets to successfully engage other fighters.

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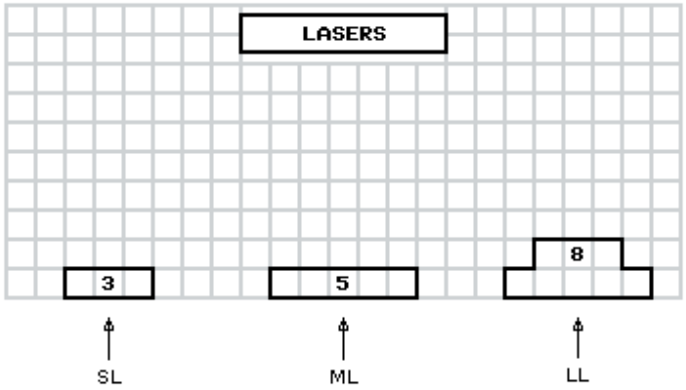
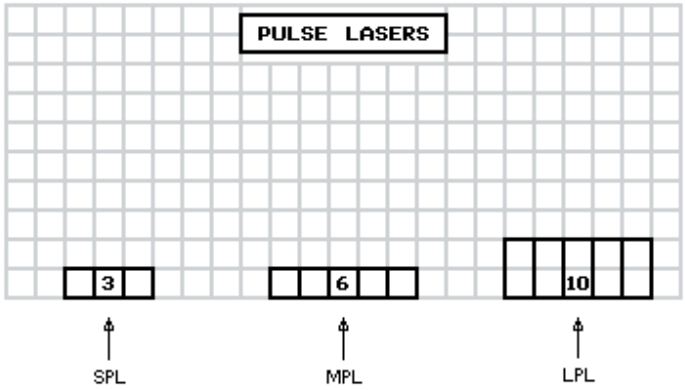
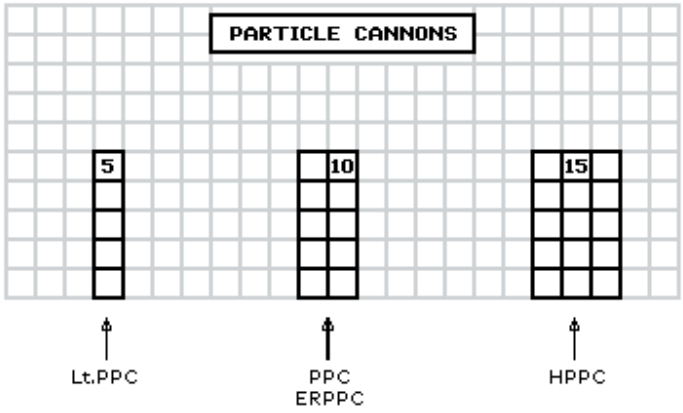
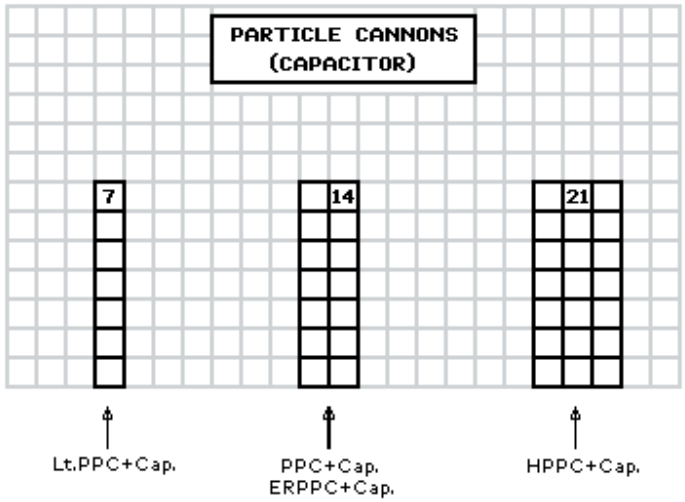
FIGHTER-SCALE DAMAGE TEMPLATES









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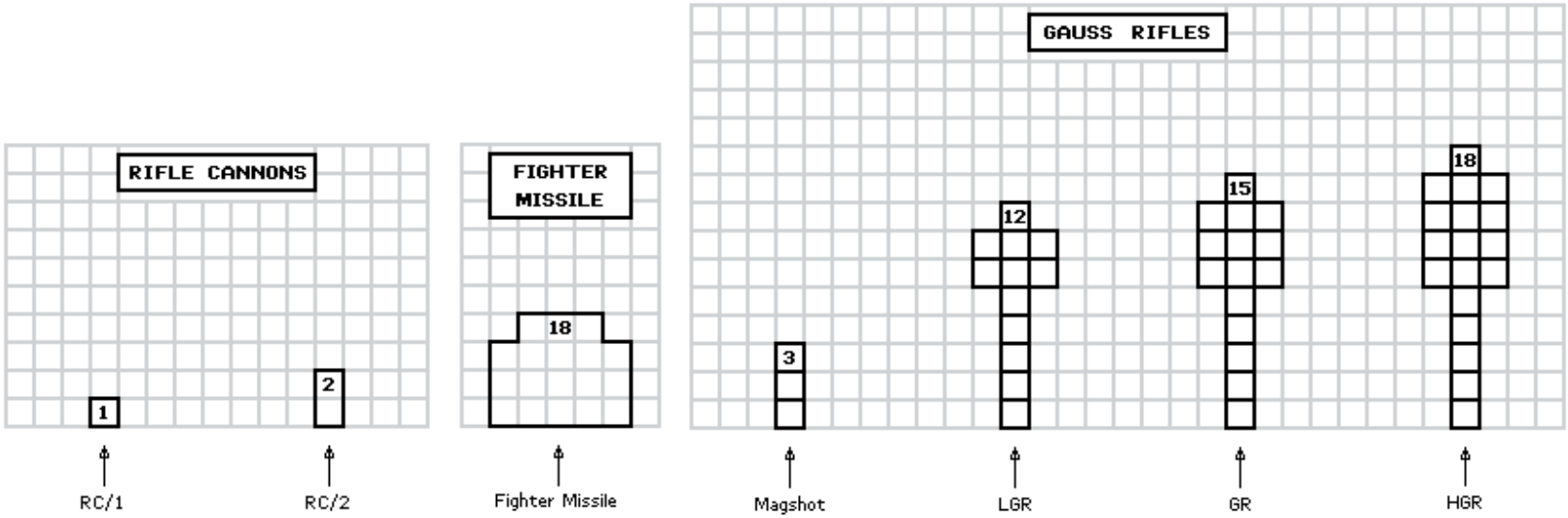
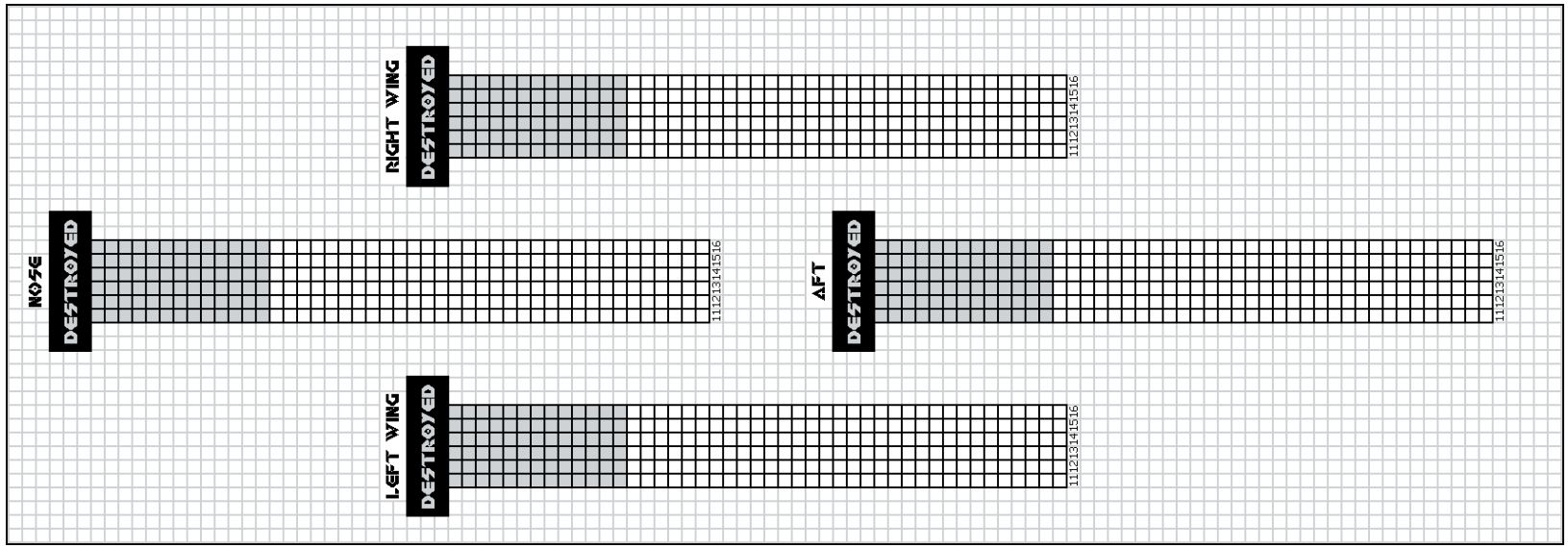
FIGHTER-SCALE DAMAGE TEMPLATES (CONT'D)



FIGHTER-SCALE ARMOUR DIAGRAMS
FIGHTER



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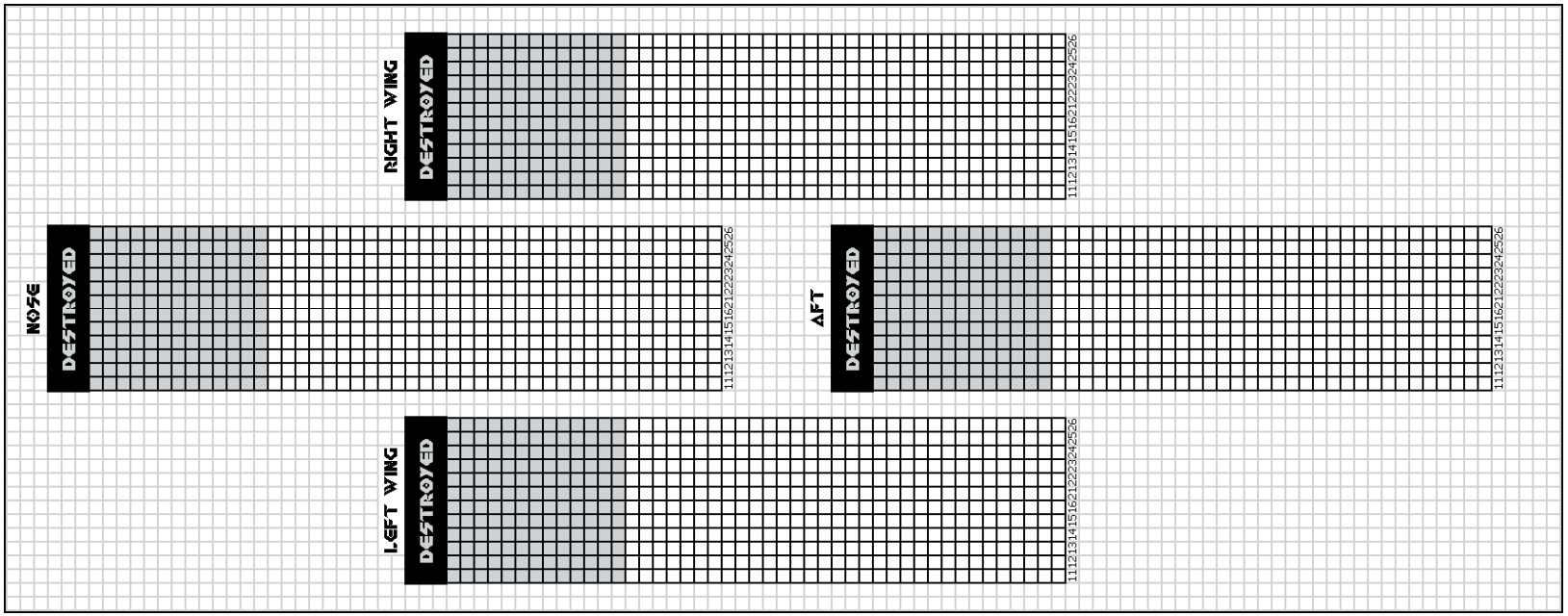
FIGHTER-SCALE ARMOUR DIAGRAMS
SMALL-CRAFT



FIGHTER FLIGHTS AND SQUADRONS

Fighter flights consist of between two and six fighters (wing-pairs within a flight must be of the same type and sub-model). A flight is treated as an AeroDyne DropShip for the purposes of combat: it has four hit-locations – Nose, Left Wing, Right Wing, and Aft – and a single SI row.

Each fighter in a flight has its own column in each hit-location of the flight control-sheet; each column's DropShip-scale armour rating in each location is determined by dividing its fighter-scale armour by 30 and rounding down. (This can result in uneven armour-blocks in mismatched flights, but this is okay; hits are resolved against individual fighters, rather than using the template system.)

Similarly, to form a DropShip-scale damage bay, all weapons of the same type within a hit-location of a flight, e.g. Left Wing/ER Large Laser or Nose/PPC, add together their damage, then divide that total either by 30 for laser bays, or 20 for bays of other weapons, and round down. These bays are classified as DB, MC, or AM (see below); note that their distributed nature exempts fighter-flights from the six-weapon-per-turret limit established below.

Fighter-flight DB bays which hit a DropShip make a Cluster Hits roll on the appropriate column, then determine the location and centre-point of the hit and apply the appropriate damage-template. Given their self-guided nature, each cluster of four XO-missiles has its own collective damage-template, while each Remora missile applies its individual damage-template; the hit-location and centre-point of each such template is determined independently. No matter the total DropShip-scale damage of these bays, each DB or MC bay can cause a critical hit to a DropShip/GunShip on a roll of 11+, while each Remora missile can cause a critical hit on 10+.

Each DropShip-scale attack that hits a fighter-flight rolls for a centre-point, which is the member-fighter hit by that attack. Each box of damage dealt by the attack forces that fighter to make a Critical Hit check; a box of damage that strikes that column's SI box destroys the fighter outright. (Sub-)capital weapons which hit a fighter's column, including sub-capital or capital missiles, always destroy that fighter outright. A nuclear warhead automatically destroys the fighter struck, and the rest of the flight must make a Piloting Skill roll (at a +3 penalty for a Type-II warhead, +5 for any Type-III-series) to avoid destruction.

When a fighter in a flight is destroyed, its corresponding column in each hit-location on the control-sheet should be crossed off, and its weapons are removed from the bays to which it contributed. (Players are encouraged to pre-calculate the appropriate effects on each bay's damage-template.) As fighters within a flight are destroyed, further hits centred on a destroyed fighter's column(s) on the armour-blocks should be rerolled.

Optionally, up to three flights may operate together as a squadron. In this case, when determining centre-points, divide the squadron into its component flights and determine which flight is struck with a d6 roll (1-3/4-6 for a two-flight squadron, 1-2/3-4/5-6 for a three-flight squadron.)

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DROPSHIPS AND GUNSHIPS

With the horrific losses incurred by the WarShip fleets of the Inner Sphere states during the (First) Succession War, there is a notable trend towards the development and deployment of combat DropShips which mount sub-capital weapons. Known as GunShips, these vessels are increasingly supplementing capital vessels as part of an offensive task-force, or taking over their roles of commerce-protection (or commerce-raiding) and intra-system defence to free the WarShips for front-line use. The most widespread of these are the SLDF's storied *Pentagons*, the equally famous *Achilles*-class favoured by the DCA, and the Federated Suns' new-yet-prolific *Avenger* (a design which often works in complement with Davion-built *Pentagons*), but Canopean *Leopard-GunShips* and Concordat *Taurus*-class vessels are also becoming quite popular amongst mercenary and Periphery customers.

CONVERSION GUIDELINES: DROPSHIPS AND GUNSHIPS

1. Size category: this limits the maximum size of any turrets mounted on the 'Ship.

    Very Small (up to 2,500t), Small (2,600-5,000t), Medium (5,100-7,500t),
    Large (7,600-10,000t), Very Large (10,100-15,000),
    Bulk Carrier/Small (15,100-20,000t), Bulk Carrier/Medium (20,100-30,000t),
    Bulk Carrier/Large (30,100-40,000t), Bulk Carrier/Very Large (40,100-50,000t),
    Bulk Carrier/Super-Large (50,100-60,000t), Bulk Carrier/Ultra-Large (60,100-100,000t)

2. SI rows: divide the DropShip's SI rating by 6 (use Swedish rounding). Each section has its own SI/armour block, twelve boxes wide, divided 1-3/4-6.

3. Armour rows per location: divide each location's armour rating by 30 (use Swedish rounding).

4. Weapons: Delete all weapons and any heat-sinks above those incorporated into the engines; this tonnage may be devoted to other components. (This system assumes that each turret mounts enough single- or double-heat sinks to completely cover its weapons heat.) Instead, choose a number and mix of turrets which best matches the original per-arc armament of the original 'Ship, subject to national preferences (Civilian turrets are available to all nations). Each fire-arc may mount up to six turrets per arc, only two of which may be sub-capital turrets. Each PD turret requires two gunners; Very Small, Small, and Medium sub-capital turrets require four gunners each, while Large and Very Large require six gunners each.

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Turrets not assigned to the Nose or Aft arcs must be laterally balanced (Wings (forward) or Wings (aft) for aerodynes, FL/FR or AL/AR for spheroids). Hulls cannot mount Sub-Capital turrets of a category larger than their own; multiple mounts of smaller-size turrets are permissible, but a hull can only mount turrets down to two categories smaller than its own, mounts must be laterally balanced, and per-arc limits still apply. Star League maritime law permitted civilian DropShips to carry sub-capital or capital missiles with conventional warheads for self-defence against piracy, but other sub-capital weapons were prohibited. (Naturally, this doesn't mean it didn't happen anyway, both in pirate hands and in clandestine House units.)

(Two V. Sml = 1 Small; three V. Sml = 2 Sml = 1 Medium; three Sml = 2 Medium = 1 Large; three Medium = 2 Large = 1 V. Large)

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DROPSHIP WEAPON BAYS

Most DropShips mount a number of turrets that house box-launched 'XO'-missiles and other conventional-scale weapons, usually energy-based but sometimes including autocannons and other ballistics in older vessels. The exact mix of these weapons is usually defined by a national military standard or the manufacturer's preferences, but problems with collimation and asymmetric torque mean that no given turret can mount more than six missile-boxes or conventional-scale weapons.

Conventional-scale DropShip weapons bays (including fighter-squadron weapons) fall into three categories: beams, missile-clusters, and counter-missile.

DropShip Beam Bay (DB)

DropShip beam bays are direct-fire attacks, using the Gunnery skill of the 'Ship's crew modified by range, attack-angle, and ECM. Beam bays determine their DropShip-scale damage by the same formula as fighter squadrons (total conventional damage of all weapons, divided by 30 for lasers or 20 for PPCs/Gauss weapons). They may act as point-defence against incoming missiles, firing at Short range and subject to hostile ECM (including any pen-aids carried by the missiles); they may also attack hostile missiles or missile-salvoes which pass within Short range, incurring a +2 penalty for a side angle-of-attack. No matter its total damage, a DB bay can cause a critical hit to a DropShip/GunShip on a roll of 11+ if it hits armour; hits to SI cause critical-hit rolls as normal.

Missile-Cluster (MC)

Missile-clusters consist of four XO-missiles of the nation's preferred type, and attack using the range and Intelligence rating of that missile-type, modified by ECM. Used offensively, each missile-cluster which hits a DropShip-scale target inflicts a single MC hit. Used as point-defence, each missile-cluster which hits destroys a single 'inbound', being one missile-cluster, one Remora-IV AShM, or one (sub-)capital missile within a salvo; they may also attack hostile missiles or missile-salvoes which pass within their range, incurring a +2 penalty for a side angle-of-attack. Each MC bay can cause a critical hit to a DropShip/GunShip on a roll of 11+ if it hits armour; hits to SI cause critical-hit rolls as normal.

Fighter squadrons carrying XO missiles may fire as many MCs as their total external missile-loads will support, but cannot reload those missiles without landing on a parent carrier. DropShip turrets which mount missile-launchers also have automatic-loaders which can reload one missile-cluster per turret per turn. WarShip turrets have larger autoloader systems which allow a given turret to fire all of its launchers every turn.

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Anti-Missile Bay (AM)

Anti-missile bays include both ballistic and laser-based anti-missile systems, machine-guns and machine-gun arrays, small pulse-lasers, and autocannons using Flak ammunition or similar weapons. They are too light and short-ranged to be used offensively, even against fighters, but as their name suggests, they can readily destroy missile-warheads. AM bays determine their capability by totaling the damage inflicted by their component weapons (pulse lasers and MGAs are treated as triple-damage, each PDMG is treated as 6 MGs), dividing that total by 12, and rounding down. Each AM bay automatically destroys 0-2 (1d3-1) warheads out of any missile-flight which enters the base hex of the bay's fire-arc.

For the sake of ease of play, each fire-arc of a DropShip, JumpShip or WarShip compiles all direct-fire attacks of the same type (PPC, laser, pulse-laser, Gauss) and all MC-attacks into a single attack, rolling on the column of the Cluster Hits table appropriate to the maximum theoretical damage of that attack and modifying the result by the attack-roll's Margin of Success/Failure. As always, a modified result of 2 or less means a complete miss.

> *An* Avenger-I*-class GunShip's Nose arc mounts a Civ-PD-5 turret (DB-1 (PPC), 4 x MC) and two Civ-PD-2* turrets (each 3 x MC, 3 x AM). Together, these turrets provide 1 PPC-based DB-1, 10 MCs of dual-purpose fire, and 6 AM factors. The PPC bay hits or misses based purely on its to-hit roll and causes a single box of damage to a fighter squadron or another DropShip, or destroys one missile out of an incoming flight. The missile-clusters apply the MoS/MoF of their attack roll to a Cluster Hits roll on the '10' column to determine the number of hits, then rolls hit-locations and centre-points for each MC which hits. The anti-missile bay automatically destroys 0-12 (6d3-6) MCs or capital warheads which attack through the* Avenger-I*'s Nose hex.*
>
> *The Nose arc of the later* Avenger-II *mounts one Civ-PD-2* (3 x MC, 3 x AM) and two Mil-PD-4* turrets (each DB-1 (ERPPC), 3 x MC, 1 x AM). That fire-arc has an ERPPC DB-2 bay (range 4/8/12/16), which applies its attack roll's MoS/MoF to a roll on the '3' column of the Cluster Hits table, then applies the appropriate-sized DB template; a missile-bay which does the same on the '9' column, and determines the location and centre-point of each hit individually; and an anti-missile bay that destroys 5d3-5 MCs or capital warheads.*
>
> *Its Lyran counterpart, the* Claymore-I *GunShip, mounts a Mil-PD-1 turret (DB-1 (ERLL), 2 x MC), a Civ-PD-5 turret (DB-1 (PPC), 4 x MC), and two Mil-PD-3 turrets (each DB-1 (LPL), 3 x MC) in its Nose arc. This gives that fire-arc a PPC DB-1 bay (range 4/8/-/-) and an ERLL DB-1 bay (range 4/8/12/-); an LPL-based DB-2 bay (-2 TH, range 4/8/-/-), which rolls on the Cluster Hits Table's '2' column, then applies the appropriate DB template; and a missile-bay which rolls on the '12' column to determine the total number of hits, then rolls locations and centre-points for each hit individually. The* Claymore-I*'s Nose arc lacks AMS protection; its crew will have to hope their missiles and beams can handle any incoming warheads....*

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STANDARDISED DROPSHIP TURRETS

Even as the aerospace fighter and the capital missile were emerging as valid tactical threats to DropShips, JumpShips, and WarShips during the Age of War, the Great Houses were seeking to counter those threats by fitting their Large Craft with point-defence turrets mounting conventional-scale weapons. Shipwrights within each House naturally modified these fits based on the range of systems available to and preferred by the particular House, and these standardised turrets soon became common across each nation's shipbuilding industry. The scale of devastation seen during the Civil War and the (First) Succession War, especially the appalling losses incurred by WarShip and DropShip fleets, prompted most powers to overhaul and upgrade many of their large craft with improved point-defence systems.

COMMERCIAL CONSTRUCTION

Type 4, 4*, 5, and 5* PD turrets are usually found on 'generic' transports and commercial hulls built to pre-Amaris specifications. Widely used during the Age of War, but falling into disfavour during the relative peace of the Star League era, the Type 1, 2, 2*, and 3 'civilian' turrets were hastily resurrected in the face of the carnage on the space-lanes during the (First) Succession War, providing improved anti-missile defences to civilian vessels to meet the increasing nuclear threat.

```
Civ-PD-1: 6 x AMS
   (All scales: AM6)

Civ-PD-2: 6 x missile-launcher
   (All scales: 6 x MC (*/-/-/-))
Civ-PD-2*: 3 x missile-launcher, 3 x AMS
   (All scales: 3 x MC (*/-/-/-), AM3)

Civ-PD-3: 6 x ML
   (DropShips: DB-1 (4/-/-/-); Capital: DB-1 (5/-/-/-))

Civ-PD-4: 4 x LL, 2 x missile-launcher
   (DropShips: DB-1 (4/8/-/-), 2 x MC (*/-/-/-); Capital: DB-1 (5/10/-/-), 2 x MC (*/-/-/-))
Civ-PD-4*: 4 x LL, 1 x missile-launcher, 1 x AMS
   (DropShips: DB-1 (4/8/-/-), 1 x MC (*/-/-/-), AM; Capital: DB-1 (5/10/-/-), 1 x MC (*/-/-/-), AM)

Civ-PD-5: 2 x PPC, 4 x missile-launcher
   (DropShips: DB-1 (4/8/-/-), 4 x MC (*/-/-/-); Capital: DB-1 (5/10/-/-), 4 x MC (*/-/-/-))
Civ-PD-5*: 2 x PPC, 3 x missile-launcher, 1 x AMS
   (DropShips: DB-1 (4/8/-/-), 3 x MC (*/-/-/-), AM; Capital: DB-1 (5/10/-/-), 3 x MC (*/-/-/-), AM)
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MILITARY POINT-DEFENCE TURRETS

PD-Mil-1: 4 x ERLL, 2 x missile-launcher
(DropShips: DB-1 (4/8/12/-), 2 x MC (*/-/-/-); Capital: DB-1 (5/10/15/-), 2 x MC (*/-/-/-))
(SLDF, now favoured by TDF, CCAF, LCAF (LCAF uses *Hellebarde* missiles))
PD-Mil-1*: 4 x ERLL, 1 x missile-launcher, 1 x AMS
(DropShips: DB-1 (4/8/12/-), 1 x MC (*/-/-/-), AM; Capital: DB-1 (5/10/15/-), 1 x MC (*/-/-/-), AM)

PD-Mil-2: 5 x MPL, 1 x missile-launcher
(DropShips: DB-1 (-2 TH, 4/-/-/-), 1 x MC (*/-/-/-); Capital: DB-1 (-2 TH, 5/-/-/-), 1 x MC (*/-/-/-))
(SLDF, now favoured by AFFS, CCAF, FWLM, LCAF (LCAF uses *Hellebarde* missiles))

PD-Mil-3: 3 x LPL, 3 x missile-launcher
(DropShips: DB-1 (-2 TH, 4/8/-/-), 3 x MC (*/-/-/-); Capital: DB-1 (-2 TH, 5/10/-/-), 3 x MC (*/-/-/-))
(SLDF, now favoured by AMC, FWLM)
PD-Mil-3*: 3 x LPL, 3 x AMS
(DropShips: DB-1 (-2 TH, 4/8/-/-), AM3); Capital: DB-1 (-2 TH, 5/10/-/-), AM3)
(SLDF, now favoured by LCAF)

PD-Mil-4: 2 x ERPPC, 4 x missile-launcher
(DropShips: DB-1 (4/8/12/16), 4 x MC (*/-/-/-); Capital scale: DB-1 (5/10/15/20), 4 x MC (*/-/-/-))
(SLDF, now favoured by AFFS, FWLM, LCAF)
PD-Mil-4*: 2 x ERPPC, 3 x missile-launcher, 1 x AMS
(DropShips: DB-1 (4/8/12/16), 3 x MC (*/-/-/-), AM; Capital: DB-1 (5/10/15/20), 3 x MC (*/-/-/-), AM)
(SLDF, now favoured by AFFS, FWLM, LCAF (LCAF uses *Hellebarde* missiles))

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MILITARY SUB-CAPITAL TURRETS

```
Very Small SCL:          2 x SCL1 or 1 x SCL2
Very Small SCM:          2 x AR5S
Very Small Cap-Missile: 2 x AR6 or AR8, or 1 x AR10

Small SCL:               3 x SCL1 or 2 x SCL2 or 1 x SCL3
Small SCM:               3 x AR5S
Small Mass-Driver:       1 x SCMAC2

Medium SCL:              4 x SCL1 or 3 x SCL2 or 2 x SCL3
Medium SCM:              4 x AR5S
Medium Cap-Missile:      3 x AR6 or AR8, or 2 x AR10
Medium Mass-Driver:      2 x SMAC2

Large SCL:               4 x SCL2 or 3 x SCL3
Large SCM:               5 x AR5S
Large Mass-Driver:       3 x SCMAC2, or 1 x SCMAC5

Very Large SCL:          4 x SCL3
Very Large Cap-Missile: 4 x AR6 or AR8, or 3 x AR10
Very Large SCM:          6 x AR5S
Very Large Mass-Driver: 4 x SCMAC2, or 2 x SCMAC5
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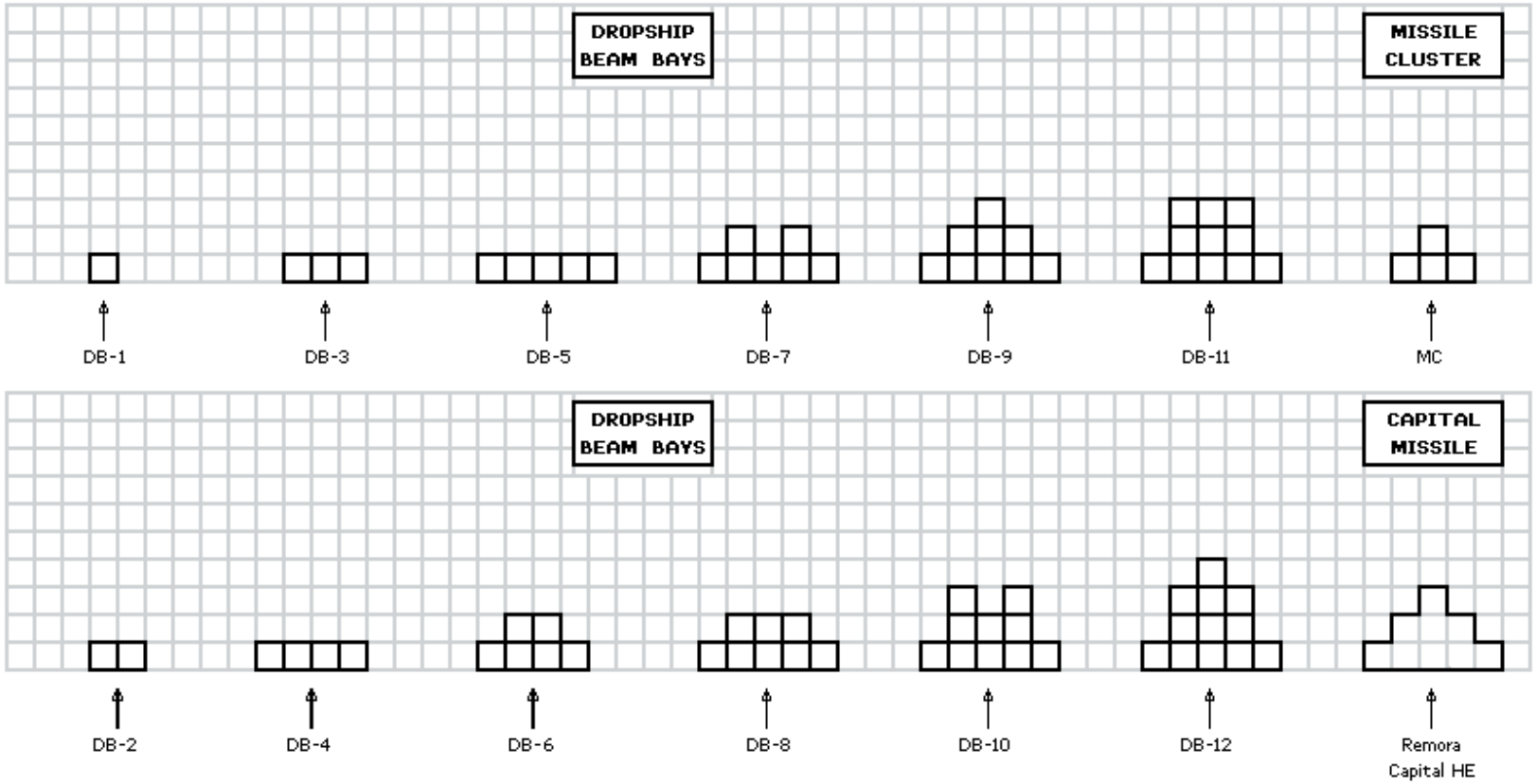
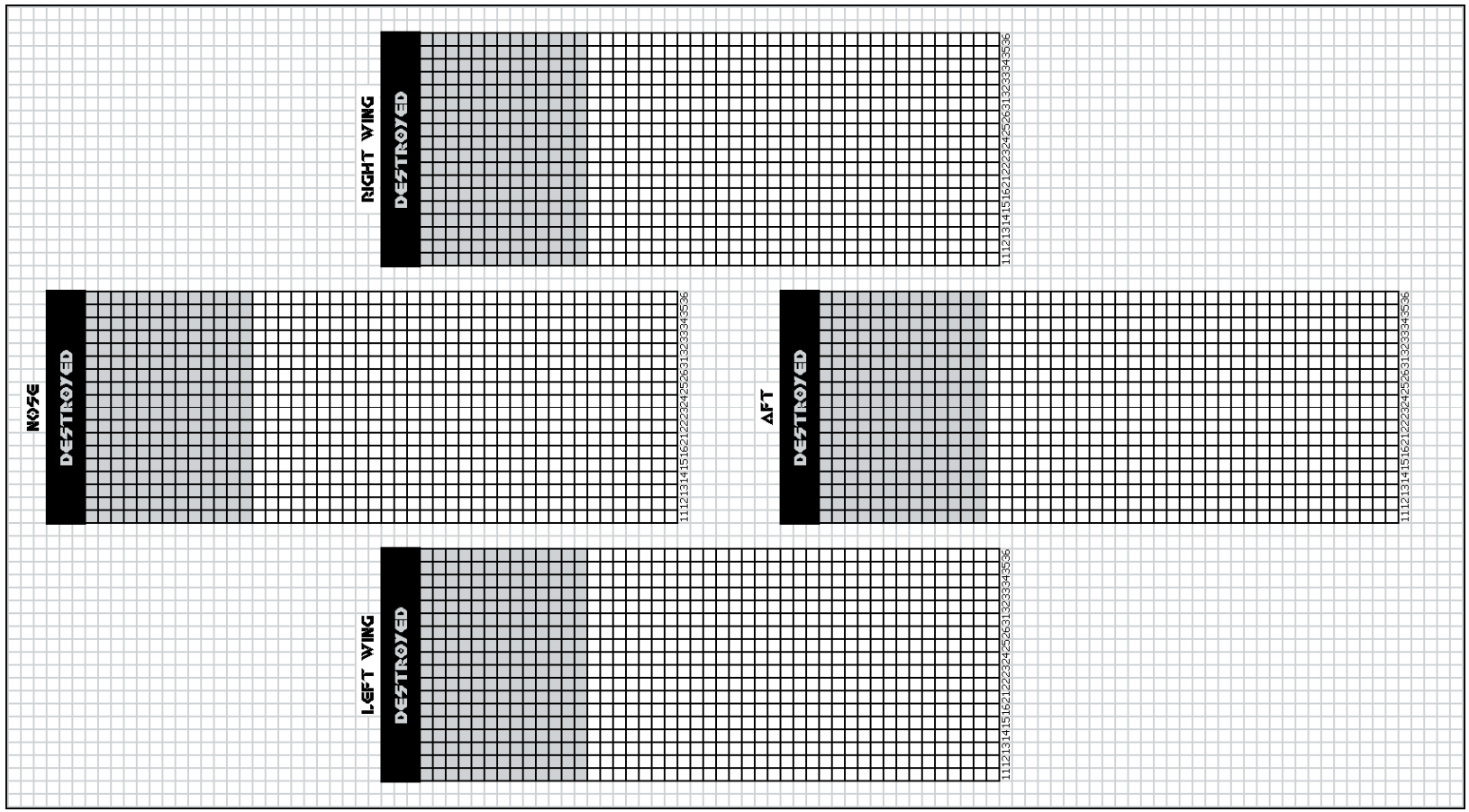
DROPSHIP-SCALE DAMAGE TEMPLATES



DROPSHIP-SCALE ARMOUR DIAGRAMS
FIGHTER SQUADRON



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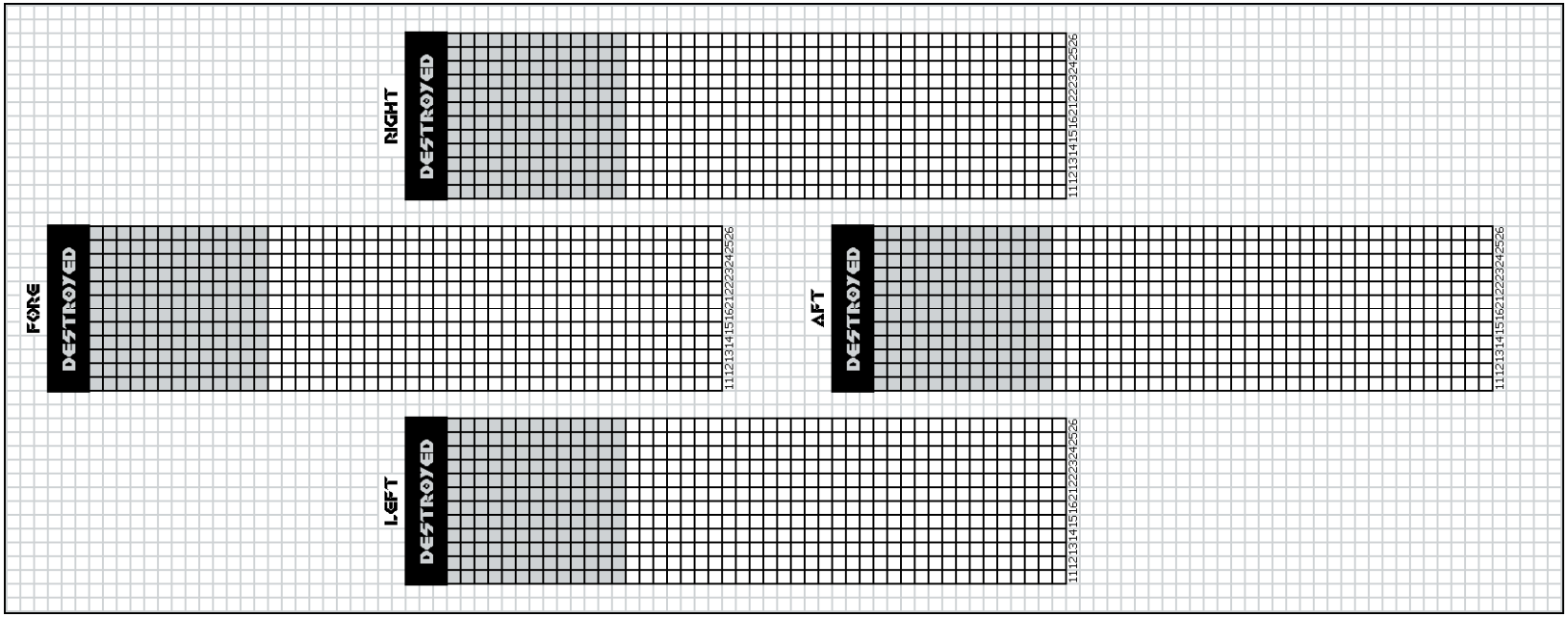
DROPSHIP-SCALE ARMOUR DIAGRAMS
DROPSHIP



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CONVERSION GUIDELINES: JUMPSHIPS AND WARSHIPS

1. Size category

Escorts	
Size 1 - Corvette	(100,000 - 300,000 tons)
Size 2 - Destroyer	(310,000 - 500,000 tons)
Cruisers	
Size 3 - Light Cruiser	(510,000 - 700,000 tons)
Size 4 - Heavy Cruiser	(710,000 - 900,000 tons)
Size 5 - Battlecruiser	(910,000 - 1,100,000 tons)
Capital ships	
Size 6 - Battleship	(1,110,000 - 1,600,000 tons)
Size 7 - Dreadnaught	(1,610,000 - 2,500,000 tons)

Escorts have four hit-locations (Nose, Aft, Left, Right); destroyers gain +1 SI row and +2 armour rows/location. SI/armour blocks are twelve boxes wide, divided 1-3/4-6. All conventional-core JumpShips are considered 'corvettes' under these rules and have a minimum of 1 SI row and 1 armour row per location.

Cruisers have six hit locations (Nose, Aft, Fore-Left, Aft-Left, Fore-Right, Aft-Right); heavy cruisers gain +1 SI row and +2 armour rows/location; battlecruisers gain +2 SI rows and +3 armour rows/location. SI/armour blocks are twelve boxes wide (divided 1-3/4-6).

Capital ships have six hit locations (Nose, Aft, Fore-Left, Aft-Left, Fore-Right, Aft-Right); battleships gain +1 SI row and +2 armour rows/location; dreadnaughts gain +2 SI rows and +3 armour rows/location. SI/armour blocks are eighteen boxes wide (divided 1-2/3-4/5-6).

2. SI rows per location: divide the WarShip's SI rating by 12 (use Swedish rounding) and add any bonus rows from size-category.

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3. Armour rows per location:
A] divide the WarShip's SI rating by 10 (use Swedish rounding). These are the base armour-rows.
B] divide each location's armour rating by 30 (use Swedish rounding) and add the result to the base armour-rows. (Escorts converting their Left and Right armour ratings use the average of the Fore and Aft armour ratings for each side.)
C] add any bonus rows from size-category.
Note that each location's critical-hit threshold is determined by its *original* armour ratings, but the roll to check for critical this enforced by threshold hits (or nuclear warheads) is modified by the armour's composition.
Armour formulation bonus/penalty:
Primitive armour: +2 bonus on all critical-checks enforced by 'thresholding' or nukes.
Standard armour: no modifier.
Ferro-aluminium armour: no modifier.
Ferro-carbide armour: -1 penalty on all critical-checks enforced by 'thresholding' or nukes.
Lamellor ferro-carbide armour: -2 penalty on all critical-checks enforced by 'thresholding' or nukes.

4. Weapons: Delete all weapons and any heat-sinks above those incorporated into the engines; this tonnage may be devoted to other components. (This system assumes that each turret mounts enough single- or double-heat sinks to completely cover its weapons heat.) Instead, choose a number and mix of turrets which best matches the original per-arc armament of the original 'Ship, subject to national preferences (Civilian turrets are available to all nations). Each PD turret requires two gunners; sub-capital turrets require four gunners each; any capital turret has a six-person crew.
Escorts (corvettes and destroyers) are too small to mount Broadside weapons; any ship of this size mounting Broadside weapons should divide them between the FL/FR and AL/AR arcs.
For technical reasons, all of the capital weapons mounted within any given turret must be of the same type and size (NL55, CMAC/10, etc.), and any given capital turret may not mount more than two Naval Gauss Rifles, four CMACs or capital energy weapons, or six missile-tubes.
In combat, turrets that hit a target roll for a single hit-location, but roll individual centre-points and apply the appropriate template for each weapon it contains. (This rule is ignored by turrets using the Dispersion Fire rule found above.) Each turret assesses its 'threshold' critical-hit chances by the weapon-template resolved, not the turret's combined throw-weight, and each turret generates only one 'threshold' check per hit-location struck. (The exception is nuclear missiles: each warhead which hits a target generates an automatic critical-check, plus another if its damage-rating exceeds the target location's threshold.) Each weapons-template which hits SI rows enforces a Critical Hit check.

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CONVERSION GUIDELINES: SPACE STATIONS

1. Size category

SMALL SPACE STATIONS
Up to 50,000 tons

MEDIUM SPACE STATIONS
50,500-250,000 tons

LARGE SPACE STATIONS
250,500-2,500,000 tons

All space-stations have six hit-locations. Small space-stations have SI/armour blocks that are six boxes wide. Medium space-stations have SI/armour blocks that are twelve boxes wide, divided 1-3/4-6. Large space-stations have SI/armour blocks that are eighteen boxes wide, divided 1-2/3-4/5-6.

2. SI rows per location: divide the station's tonnage by 100,000 (round up).

3. Armour rows per location: 1 armour row per SI row, plus (armour/30) rows. Threshold value is determined by the location's original armour rating.

A] 1 free armour row per SI row. These are the base armour-rows.

B] divide each location's armour rating by 30 (use Swedish rounding) and add the result to the base armour-rows.

Note that each location's critical-hit threshold is determined by its *original* armour ratings, but the roll to check for threshold criticals is modified by the armour's composition.

Armour formulation bonus/penalty:

- Primitive armour: +2 bonus on all critical-checks enforced by 'threshold' hits.
- Standard armour: no modifier.
- Ferro-aluminium armour: no modifier.
- Ferro-carbide armour: -1 penalty on all critical-checks enforced by 'threshold' hits.
- Lamellor ferro-carbide armour: -2 penalty on all critical-checks enforced by 'threshold' hits.

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4. Weapons: Delete all weapons and any heat-sinks above those incorporated into the engines; this tonnage may be devoted to other components. (This system assumes that each turret mounts enough single- or double-heat sinks to completely cover its weapons heat.) Instead, choose a number and mix of turrets which best matches the original per-arc armament of the original station, subject to national preferences (Civilian turrets are available to all nations). Each PD turret requires two gunners; sub-capital turrets require four gunners each; any capital turret has a six-person crew.

For technical reasons, all of the capital weapons mounted within any given turret must be of the same type and size (NL55, CMAC/10, etc.), and any given capital turret may not mount more than two Naval Gauss Rifles, four CMACs or capital energy weapons, or six missile-tubes.

In combat, turrets that hit a target roll for a single hit-location, but roll individual centre-points and apply the appropriate template for each weapon it contains. (This rule is ignored by turrets using the Dispersion Fire rule found above.) Each turret assesses its 'threshold' critical-hit chances by the weapon-template resolved, not the turret's combined throw-weight, and each turret generates only one 'threshold' check per hit-location struck. (The exception is nuclear missiles: each warhead which hits a target generates an automatic critical-check, plus another if its damage-rating exceeds the target location's threshold.) Each weapons-template which hits SI rows enforces a Critical Hit check.

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CAPITAL AND SUB-CAPITAL WEAPONS

CAPITAL WEAPONS

These systems, the heaviest weapons available to any of the known powers, form the primary armament of most WarShips and are increasingly being deployed in ground-to-orbit batteries defending key sites on critical worlds. With yields rivaling those of small nuclear weapons, capital beam and kinetic weapons can sterilise entire cities (without fallout) in a matter of minutes. Even the massive amounts of armour carried by most WarShips have limited success withstanding these staggering energies, yet the survival of those space-going behemoths can be threatened by nothing less.

SUB-CAPITAL WEAPONS

Also known as 'light capital weapons', these systems are typically found as semi-mobile surface-to-space defence systems for locations deemed strategically vital, including the main cities of many regional and national capital-worlds. However, with the horrific losses incurred by the WarShip fleets of the Inner Sphere states during the (First) Succession War, there is a notable trend towards the development and deployment of combat DropShips which mount these weapons. Known as GunShips, these vessels are increasingly supplementing capital vessels as members of offensive task-forces, or taking over their roles of commerce-protection (or commerce-raiding) and intra-system defence to free the WarShips for front-line use. The most widespread of these are the SLDF's storied *Pentagons*, the equally famous *Achilles*-class favoured by the DCA, and the Federated Suns' new-yet-prolific *Avenger* (a design which often works in complement with Davion-built *Pentagons*), but Canopean *Leopard-GunShips* and Concordat *Taurus*-class vessels are also becoming quite popular amongst mercenary and Periphery customers.

ANTI-AIRCRAFT TARGETING MODE (OPTIONAL RULE)

By using sophisticated targeting algorithms and staggering the discharge of their capacitors, capital and sub-capital lasers can 'sweep' their beams across a volume of space; while these sustained discharges lack the power to harm capital- or even DropShip-grade armour, they still have more than enough energy to incinerate fighters or missiles. This rule modifies Anti-Aircraft Targeting Mode (*Strategic Operations*, p.99).

Capital- and sub-capital laser-turrets employing Anti-Aircraft Targeting Mode against a small-craft formation or flight of missiles make a normal attack roll; instead of the normal To-Hit modifiers for capital weapons attacking small-craft, sub-capital lasers apply a +1 To-Hit penalty, while capital lasers apply a +3 To-Hit penalty. If the turret hits, each weapon within destroys a single target within the formation e.g. a triple-NL45 turret would destroy three targets. Laser-turrets may not use using Anti-Aircraft Targeting Mode against Large Craft, including DropShips, JumpShips, WarShips, or Space Stations.

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DISPERSION FIRE (OPTIONAL RULE)

Direct-fire capital and sub-capital turrets normally fire all their weapons near-simultaneously, attempting to land all of their shots on the same point on the target to maximise damage. However, at longer ranges, or in ECM-heavy environments, many captains will order the use of dispersion fire, in which each turret's weapons fire in prescribed sequences, sacrificing concentrated damage in order to score at least some hits. The techniques and algorithms controlling this fire-control mode were originally restricted to the SLDF alone, but captured data and battlefield improvisation have resulted in all of the Successor States developing equivalent capabilities since the start of the Succession War(s).

Turrets using Dispersion Fire make a normal To-Hit roll, then apply the Margin of Success (or Failure) to a roll on the column of the Cluster Hits table matching the number of weapons in the turret. A modified result of 2 or less means none of the weapons hit; otherwise, determine a hit-location and centre-point for each weapon which connects and apply the appropriate effects (destruction of a small craft or DropShip, or a template's worth of damage to a capital-scale target).

This rule supersedes Bracket Fire (*Strategic Operations*, p.99). Single-weapon turrets may not use Dispersion Fire. Turrets using Dispersion Fire may not combine it with Called Shots (*Strategic Operations*, p.100); capital and sub-capital laser turrets using Dispersion Fire may not combine it with Anti-Aircraft Targeting Mode.

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CAPITAL AND SUB-CAPITAL ENERGY WEAPONS

As (near-)light-speed weapons, Sub-Capital and Capital energy systems enjoy far better effective ranges than missiles or ballistic systems, but they are precluded from completely dominating aerospace combat by their problems with beam-dispersion at extreme ranges and the fact that modern semi-ablative armour is designed specifically to blunt their effects. Nonetheless, it is a rare force which does not make enthusiastic use of naval energy weapons – even if only as long-range 'skirmishing' weapons and planetary-defence batteries – as soon as their technological base and infrastructure will support them.

Owing to the reduced need to calculate deflection when using near-lightspeed weapons, all capital and sub-capital energy weapons suffer only *half* the normal To-Hit penalties at ranges beyond Short (thus range penalties are +1 at Medium, +2 at Long, and +4 at Extreme).

SUB-CAPITAL LASERS

Light, ammunition-independent, and offering enough punch to shatter a DropShip or obliterate fighters, sub-capital lasers are the primary direct-fire armament of many GunShips. Owing to the size of the mounts and traverse-speed limitations, sub-capital lasers suffer a +3 penalty to hit when targeting small-craft, but can use Anti-Aircraft Targeting (*Strategic Operations* p.99) or Dispersion Fire (q.v.) to offset this.

	MASS	CRITS	TYPE	HEAT	DAMAGE (Capital)	TO-HIT	SHORT	MEDIUM	LONG	EXTREME	COST
SCL1	150	1-C*	CAP, AE	20	1/ 1/ */ *	-	8	12	16	20	220,000
SCL2	200	1-C*	CAP, AE	30	2/ 1/ 1/ *	-	10	15	20	25	335,000
SCL3	250	1-C*	CAP, AE	40	3/ 2/ 1/ 1	-	12	18	24	30	450,000

* At these ranges, the weapon's beam has dispersed to the point where it cannot damage WarShip or DropShip armour, but it still has enough energy to destroy a missile or small-craft.

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CAPITAL LASERS

Although they lack the raw punch of mass drivers, and their penetrative capabilities are sharply limited by the nature of modern armour, the range-performance of capital lasers is almost unparalleled in space-combat direct-fire weaponry. Owing to the size of the mounts and traverse-speed limitations, capital lasers suffer a +5 penalty to hit when targeting small-craft, but can use Anti-Aircraft Targeting or Dispersion Fire (q.v.) to offset this.

	MASS	CRITS	TYPE	HEAT	DAMAGE (Capital)	TO-HIT	SHORT	MEDIUM	LONG	EXTREME	COST
NL35	700	1-C*	CAP, AE	52	4/ 3/ 2/ 1	-	14	21	28	35	500,000
NL45	900	1-C*	CAP, AE	70	5/ 4/ 3/ 2	-	16	24	32	40	850,000
NL55	1,100	1-C*	CAP, AE	85	6/ 5/ 4/ 3	-	18	27	36	45	1,250,000

CAPITAL PPCS

The longest-range direct-fire weaponry available to WarShips, the extreme heat and near-lightspeed velocity of the particle-streams fired by capital particle-projection cannons gives them far greater penetration capabilities than lasers or nuclear detonations, albeit in very narrow 'tunnels'. Owing to the size of the mounts and traverse-speed limitations, capital PPCs suffer a +5 penalty to hit when targeting small-craft, but can use Dispersion Fire (q.v.) to offset this.

	MASS	CRITS	TYPE	HEAT	DAMAGE (Capital)	TO-HIT	SHORT	MEDIUM	LONG	EXTREME	COST
Light N-PPC	1,600	1-C*	CAP, AE	120	8/ 6/ 4/ 2	-	16	24	32	40	2,000,000
Medium N-PPC	2,400	1-C*	CAP, AE	180	12/10/ 8/ 6	-	18	27	36	45	3,250,000
Heavy N-PPC	3,200	1-C*	CAP, AE	240	16/14/12/10	-	20	30	40	50	6,050,000

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CAPITAL AND SUB-CAPITAL MAGNETIC-ACCELERATION CANNONS

Boasting muzzle-velocities almost twice those of conventional-scale Gauss weapons, CMACs are the only ballistic weapons with useful combat ranges in aerospace combat. Although still short-ranged and inaccurate when compared to energy-weapons or missiles, MACs remain popular for their relatively low heat-burdens and their ability to deliver devastating blows with only a few hits. After all, beams disperse over range, and missiles can be destroyed or decoyed, but a 'dumb' ballistic projectile can only be evaded.

Later-generation developments, pioneered by the Terran Hegemony, led to the deployment of 'extended-range' CMAC weapons, colloquially known as 'Naval Gauss Rifles'. Heavy and bulky compared to the older weapons, NGRs take up colossal amounts of space in their turrets and suffer from certain technical limitations that prevent them from using the heaviest projectiles available to their smaller cousins. That being said, their acceleration-coils generate double-again the muzzle-velocity of even a CMAC, making for impact-energies comparable to those of the heaviest MACs and range-profiles competitive with energy weapons.

Conscious of the simmering tensions hiding beneath the plastic smiles and crystalline amity of the Star League, the Terran Hegemony continued highly-classified experiments with even larger and higher-velocity Gauss weapons, hoping to come up with a weapon that could hit harder, sooner, and at longer range than nuclear-tipped tactical missiles. Although those experiments did bear fruit, the resulting weapons were just so big and heavy that ships essentially had to be built around them, and aiming the 'spinal mount' at a target required aiming the entire *ship* — nominally possible against immobile targets, but far harder against a vessel capable of meaningful evasive manoeuvres. Despite the amount of time, money and effort sunk into its development, the SLDF eventually decided that 'mass drivers' were not only unwieldy and tactically limited, they were incompatible with SLDF doctrine; no known SLDF vessel ever mounted a mass driver in operational service. Delhi Ships' famous *Soyal*-class cruiser was designed to accommodate a spinal mass-driver, but was ultimately declined in favour of Mitchell Vehicles' *Luxor*-class cruiser; the SLDF was quietly happy to see the vessels sold to the Capellan Confederation and Free Worlds League, viewing the mass driver as a poisoned chalice and the ships as white elephants.

It should be noted that even at the velocities offered by Mass Drivers, matters of time-of-flight and the according window-of-evasion afforded to the intended target mean that no capital ballistic weapon is effective against a mobile target at Extreme range.

	MUZZLE VELOCITY	RANGES		
		SHORT	MEDIUM	LONG
SCMAC or CMAC	7,200 m/s	6	12	18
NGR	14,400 m/s	12	24	36
MASS DRIVER	28,800 m/s	24	48	72

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SUB-CAPITAL MAGNETIC-ACCELERATION CANNONS

Refinements of the very first, small-scale prototypes of what would become capital MACs, these weapons were quickly superseded for WarShip use by larger, more powerful designs. Nonetheless, their relatively light weight and compact size means they can be mounted on GunShips, often in multi-gun turrets, and a few salvos from such turrets can be surprisingly dangerous to most JumpShips and many WarShips.

Owing to the size of the mounts and traverse-speed limitations, sub-capital MACs suffer a +3 penalty to hit when targeting small-craft, but can use Dispersion Fire (q.v.) to offset this.

	MASS	CRITS	TYPE	HEAT	DAMAGE (Capital)	AMMO (tons/round)	TO-HIT	COST
SCMAC2	200	1-C*	CAP, AE	15	2	0.04	-	350,000 (10,000)
SCMAC5	500	1-C*	CAP, AE	25	5	0.10	-	750,000 (20,000)

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CAPITAL MAGNETIC-ACCELERATION CANNONS

These are the favoured close-range weapons of many WarShip designers. The primary differences between CMAC designs lie in the size of the projectiles, ranging between 'merely' two hundred kilogrammes in the classic 'MAC-10' up to a colossal eight-hundred kilos in the heaviest designs that can be mounted in a WarShip turret. The SLDF experimented with even larger weapons, but recoil and traverse-speed issues meant that they could only make them work as 'spinal mounts'. The most common CMAC designs fire two-, four-, six- or eight-hundred-kilo projectiles, but various national design bureaux have created intermediate designs, either to fit perceived tactical niches or as a matter of national pride.

Owing to the size of the mounts and traverse-speed limitations, capital magnetic-acceleration cannons suffer a +5 penalty to hit when targeting small-craft, but can use Dispersion Fire (q.v.) to offset this.

	MASS	CRITS	TYPE	HEAT	DAMAGE (Capital)	AMMO (tons/round)	TO-HIT	COST
CMAC10	2,000	1-C*	CAP, AE	30	10	0.20	-	2,000,000 (30,000)
CMAC20	3,000	1-C*	CAP, AE	60	20	0.40	-	5,000,000 (60,000)
CMAC25	4,500	1-C*	CAP, AE	85	25	0.50	-	7,500,000 (75,000)
CMAC30	5,500	1-C*	CAP, AE	100	30	0.60	-	10,500,000 (90,000)
CMAC35	6,500	1-C*	CAP, AE	120	35	0.70	-	14,000,000 (105,000)
CMAC40	7,000	1-C*	CAP, AE	135	40	0.80	-	18,000,000 (120,000)

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NAVAL GAUSS RIFLES

Technically known as 'extended-range capital magnetic-acceleration cannons', but called 'Naval Gauss Rifles' for convenience, these devastating weapons combine competitive range envelopes with heavy damage and high penetration. However, the engineering involved in manufacturing, deploying and maintaining these weapons means that many powers still consider energy weapons more cost-effective, especially when considering the rising use of 'dispersion fire' in many naval engagements. NGR turrets, being limited to only single or twin-mounts by the sheer size of the weapons, are at a significant disadvantage in such 'bracketing' situations when compared to the triple- or quad-mounts commonly used by beam-weapons or shorter-ranged MACs.

Owing to the size of the mounts and traverse-speed limitations, NGRs suffer a +5 penalty to hit when targeting small-craft, but can use Dispersion Fire (q.v.) to offset this.

	MASS	CRITS	TYPE	HEAT	DAMAGE (Capital)	AMMO (tons/round)	TO-HIT	COST
NGR10	2,000	1-C*	CAP, AE	100	10	0.05	-	6,000,000 (12,000)
NGR20	5,000	1-C*	CAP, AE	150	20	0.10	-	9,000,000 (20,000)
NGR30	8,000	1-C*	CAP, AE	200	30	0.15	-	12,500,000 (30,000)
NGR40	11,000	1-C*	CAP, AE	250	40	0.20	-	16,000,000 (30,000)

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MASS DRIVERS

Also known as 'spinal mounts', for the only vaguely-practical way they can be mounted on a WarShip, these weapons have incredible range and damage-potential, but their incredibly narrow fields of fire limit their ability to hit mobile targets.

Special Rules:

- A WarShip may mount only one mass driver, firing into the bow arc; a space-station may mount only one mass driver per arc.
- Mass drivers suffer a +2 to-hit penalty at all ranges, reflecting the difficulty of 'aiming' the colossal weapon.
- Within Short range (0-24 hexes), a mass-driver may only hit a target that lies on the line of hexes directly in front of its muzzle. At Medium range (25-48 hexes), a mass-driver's arc-of-fire widens to include the column of hexes on either side of that centre-line (becoming three hexes wide in total), but the normal +2 range-penalty applies. At Long range (49-72 hexes), the arc-of-fire expands again, to a total of five hexes wide (two hexes to either side of the centerline), but again the normal +4 range-penalty applies.
- Mass drivers may be fired at small-craft if the controlling player chooses, but the normal +5 to-hit penalty for using a capital weapon against a non-capital target does apply, and stacks with all other relevant modifiers (including the base +2 penalty suffered by all mass-driver fire).

	MINIMUM SHIP SIZE	TYPE	HEAT	DAMAGE (Capital)	AMMO (tons/round)	TO-HIT	COST
LIGHT MASS DRIVER	Heavy Cruiser	CAP, AE	350	60	0.30	-	6,000,000 (12,000)
MEDIUM MASS DRIVER	Battleship	CAP, AE	550	100	0.50	-	9,000,000 (20,000)
HEAVY MASS DRIVER	Dreadnaught	CAP, AE	750	140	0.70	-	12,500,000 (30,000)

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CAPITAL AND SUB-CAPITAL MISSILES

Using compact fusion engines designed for maximum acceleration (and which effectively consume themselves in the process), full-sized capital missiles can reach velocities of thirty-six kilometres-per-second by the time their drives burn out*. However, this use of a fusion plant subjects them to 'kinetic censorship', meaning their damage-potential lies solely in their warheads. Without a compressible medium to transmit blast-effect to their target, the high-explosive warheads commonly used against fighters, missiles, and DropShips are completely ineffectual against WarShip-grade armour in vacuum, and so nuclear payloads are preferred for anti-'Shipping operations.

Although the base designs vary between manufacturers, the sub-capital and capital missile launchers built across the Inner Sphere are functionally identical in gameplay. The individual rounds used vary depending on tactical role, and are loaded in the launchers based on the projected threat-environment. (Please note that the construction details below are used only for Mobile Structures and fixed installations; space-bound craft use the Turret rules explained later in this document.)

Of these weapons, the Swordfish and Killer Whale have the heaviest warheads, and also carry packages of 'penetration aids' (decoys and ECM systems) intended to confuse and dilute defensive fire, thus increasing the chances of the missiles reaching their targets. Stingray and White Shark missiles have fewer pen-aids, but incorporate pattern-recognition guidance-modules which improve their chances of damaging exposed 'soft targets' such as turrets, sensor-mounts, and fighter-bays. The lightest of these weapons, the Piranha and Barracuda missiles, have the fewest warheads, instead devoting their internal space to 'brilliant' seekers and ECCM modules which make them ideal for anti-fighter and counter-missile duties.

	LAUNCHER MASS	COMPATIBLE WEAPONS	CRITS	TYPE	COST
AR5S	100	Piranha, Stingray, Swordfish	1-C*	CAP, AE	75,000
AR6	150	Stingray, Swordfish, Barracuda	1-C*	CAP, AE	90,000
AR8	200	Swordfish, Barracuda, White Shark	1-C*	CAP, AE	120,000
AR10	250	Barracuda, White Shark, Killer Whale	1-C*	CAP, AE	150,000

* Capital missiles use 800/45 drives, introduced in the early 27th century, which sustain accelerations of 800m/s^2 for 45 seconds; sub-capital missiles 'only' use cheaper 800/30 drives, resulting in lower ranges and endurances.

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	MISSILE MASS	HEAT	MISSILE RANGE	WARHEADS	SEEKER INTELLIGENCE	SEEKER DETECTION RANGES	ECCM/ECM & PEN-AIDS	COST
SUB-CAPITAL MISSILES								
PIRANHA	10	6	20	1	4	16/24/32	-2/--	7,000
STINGRAY	15	9	20	3	5	10/20/30	--/+1	10,000
SWORDFISH	20	12	20	4	6	8/16/24	--/+2	13,000
CAPITAL MISSILES								
BARRACUDA	30	10	45	3	4	20/30/40	-2/--	12,000
WHITE SHARK	40	15	45	4	5	12/24/36	--/+1	14,000
KILLER WHALE	50	20	45	6	6	10/20/30	--/+2	20,000

Turrets or bays housing multiple missile-tubes cannot mix missile types in their salvoes: all must be of the same missile- and warhead-type. All missiles launched from the same bay attack the same target and share the same to-hit roll. All conventionally-armed sub-capital and capital missiles use the same HE warheads, carrying one ton of HE (equivalent to the throw-weight of a Remora fighter-borne missile, and using that template against DropShips/GunShips).

All current-generation sub-capital missiles are powered by 800/30 fusion rockets, while full-scale capital missiles have the room for 800/45 drives. It is important to note that these missiles and their drives did not reach widespread use until the early 27th century, *after* the Reunification War; the dearth of major fleet-engagements during the Star League period meant that naval tacticians and designers had not fully grasped the paradigm-shift they heralded by the time of the Amaris Coup, or even until the start of the Succession War(s).

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(SUB-)CAPITAL MISSILE-CLUSTERS

Missile clusters share targeting data and ECM/pen-aid coverage; missiles which carry ECM/pen-aids also gain a bonus to this coverage owing to the increased signal:noise ratio. These bonuses degrade as missiles within the salvo are destroyed, shrinking in accordance with the number of missiles remaining. (Pre-worked values for clusters of all missile-types covered under these rules are available in the Appendix.)

Missiles in salvo	ECCM Bonus	ECM Bonus
1	-	-
2-3	-1	+1
4-5	-2	+2
6	-3	+3

Fighters and small-craft can attack hostile (sub-)capital missiles that pass near them, as per *Strategic Operations*, subject to the range-limitations of their XO and onboard weapons. Onboard weapons such as machine-guns and ground-combat ACs/missiles have an effective range of only one hex.

Bearing-Only and Pre-Programmed Waypoint launches operate as per *Strategic Operations*, but (sub-)capital missiles have a base Launch Velocity equal to their base range.

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SUB-CAPITAL MISSILE	WARHEAD OPTIONS
REMORA	1 x HE or 1 x Mark.83
PIRANHA	1 x HE or 1 x Mark.92
STINGRAY	3 x HE or 3 x Mark.83
SWORDFISH	4 x HE or 4 x Mark.92

CAPITAL MISSILE	WARHEAD OPTIONS
BARRACUDA	3 x HE or 3 x Mark.95
WHITE SHARK	4 x HE or 4 x Mark.95 (or 3 x strategic)
KILLER WHALE	6 x HE or 6 x Mark.95 (or 4 x strategic)

WARHEADS

The high-explosive warheads detailed above are used only for attacking hostile missiles, small-craft, delivering 'warning shots' to DropShips, and for conducting orbit-to-surface bombardments when aerospace fighters are unavailable and the kiloton-level energies of other capital weapons are deemed excessive. (Each HE warhead which strikes a fighter-squadron completely destroys one fighter; each HE warhead which hits a DropShip/GunShip is resolved as a Remora-IV template.)

However, even a warhead containing several tons of modern chemical explosives simply cannot do meaningful damage to the metres-thick battle-steel of WarShip hulls; if (sub-)capital missiles are to be used against a hostile WarShip, the only effective payload they can deliver is a nuclear 'physics package'. Apart from the warhead combinations listed above, the White Shark and Killer Whale spaceframes are also the preferred delivery-vehicle for strategic-grade packages such as the 500kT Mark.101 ('Type-IV'/'Peacekeeper') and even packages with yields in the megaton range, but such weapons are optimised for orbital bombardment, rather than engaging mobile targets, and as such cannot be used in aerospace combat.

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(That being said, with the carnage of the Succession War fresh in their memories, most forces are highly reluctant to re-open the Pandora's Box of high-yield nuclear exchanges. Strategic-grade weapons and their arming codes are generally issued only with very specific objectives and orders in mind, and their use must be pre-authorised by the relevant national command authority. Even release-authority on the Type-IV does not fall to anyone below Admiral's rank; those officers can use them 'under the most extreme military necessity', but they had better be prepared to justify the decision in front of a Board of Inquiry.)

It must be understood the nature of nuclear events in space limits the effective energy-transfer to the target: even a 'contact' hit delivers only about 20% of the event's rated yield to the target, with the rest being lost to space. Alternate physics-package configurations with improved yield-on-target ratios exist in theory, but none are in active use by any of the Inner Sphere or Periphery powers and are outside the scope of this document.

Note that the crit. chance listed beside each physics package is applied only to the possibility of damaging important equipment within the target WarShip or space station; under these rules, the '10x damage to SI on a successful critical hit' rule (*Historical: Reunification War*, p.193) does *not* apply. However, each nuke generates Threshold critical chances as normal for its listed damage value, meaning that every nuclear event can mandate *two* checks for critical hits.

NUCLEAR PHYSICS PACKAGE	YIELD (kilotons)	DAMAGE (Capital scale)	CRIT CHANCE
Mark.73 ('Type-II'/'Alamo')	5	1	11+
Mark.83 ('Type-IIIa'/'Santa Ana-A')	50	10	10+
Mark.92 ('Type-IIIb'/'Santa Ana-B')	100	20	9+
Mark.95 ('Type-IIIc'/'Santa Ana-C')	200	40	8+

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COMBAT RULES

Unlike direct-fire weapons, offensive missile-fire must be declared during the *movement* phase, at any point along a given vessel's movement, at which point a token representing the missile-salvo is placed on the game-board. (Any missile-system that does not declare offensive fire during the movement phase is presumed to be operating in defensive-fire mode.) Once all other vessels and fighters on the game-board have moved, players take turns, in initiative order, moving their missile-tokens from their starting-points towards their targets along any valid path between the two points. At any point along that path, the defender may declare and resolve 'interception fire' from any vessel, including the target vessel, whose weapons have the missile-token within their fire-arc and range at that point; if any missiles survive the interception fire, they continue their movement.

Once a missile-token arrives at its target, the controlling player makes the to-hit roll, using the salvo's Intelligence rating as the base Gunnery skill and applying its ECCM rating to counter the target's ECM field, then makes a Cluster Hits roll on the column matching the number of missiles left in the salvo (modified by the To-Hit roll's Margin of Success or Failure, treating a modified roll of '2' or less as a complete miss). The result is the number of missiles which hit the target vessel.

The target vessel's anti-missile bays, if any, then engage the warheads of the missiles which hit. If any warheads survive the target vessel's defensive fire and AM bays, the controlling player rolls hit-locations and centre-points as normal, with the target vessel incurring the appropriate damage-template and any critical-hit effects.

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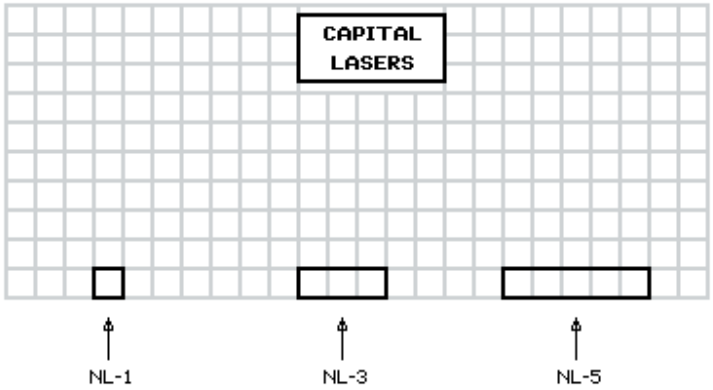
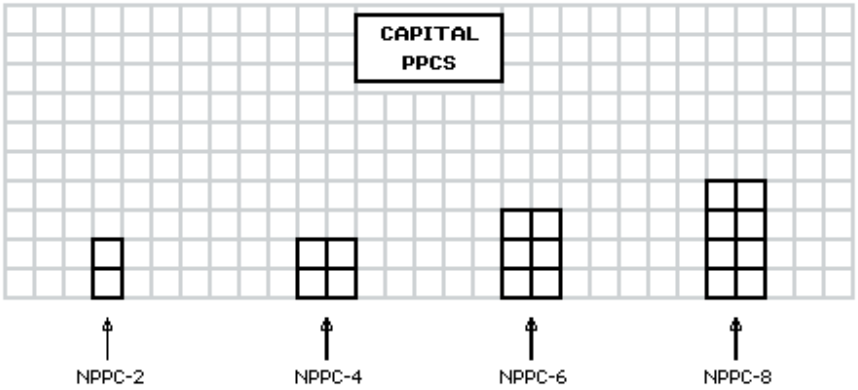
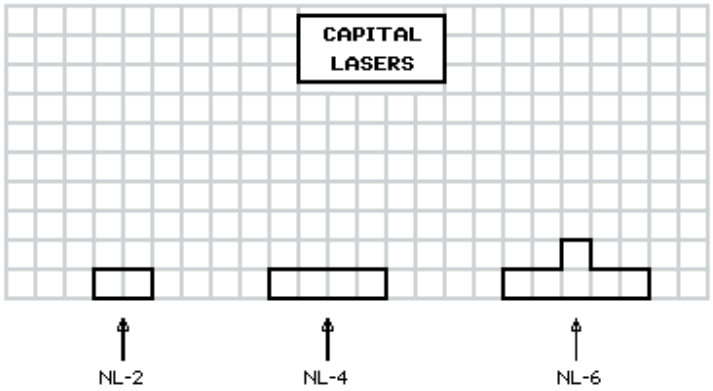
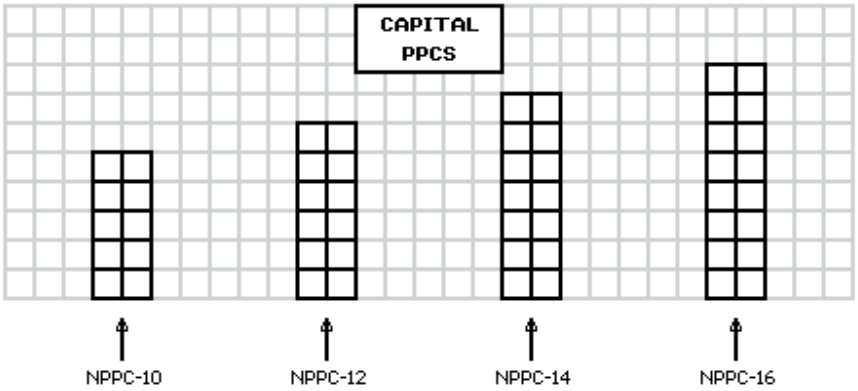
CAPITAL-SCALE DAMAGE TEMPLATES









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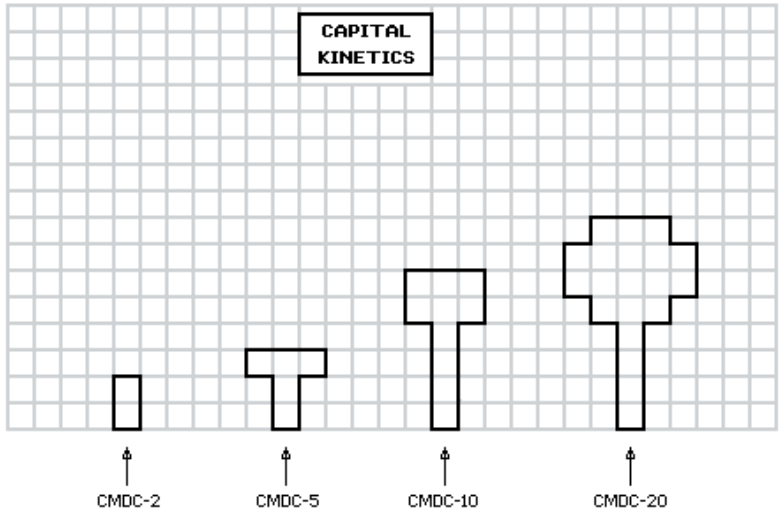
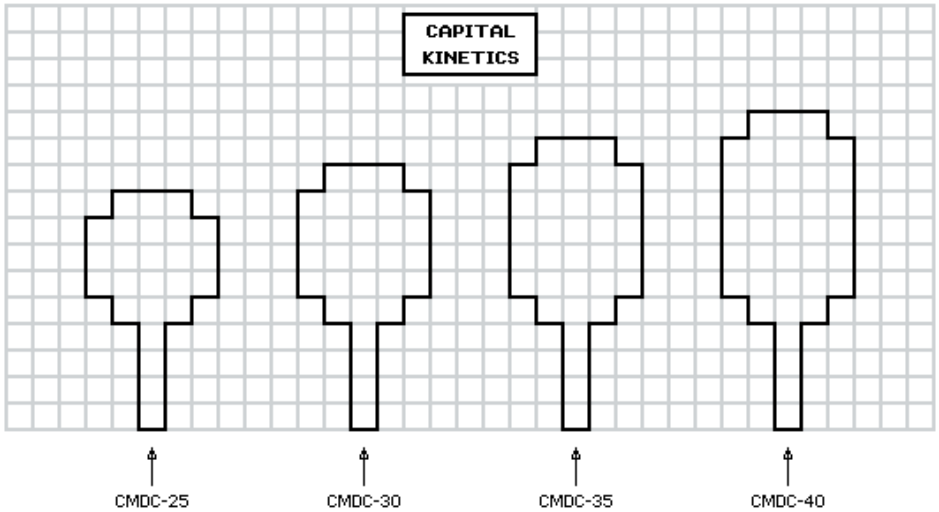
CAPITAL-SCALE DAMAGE TEMPLATES (CONT'D)





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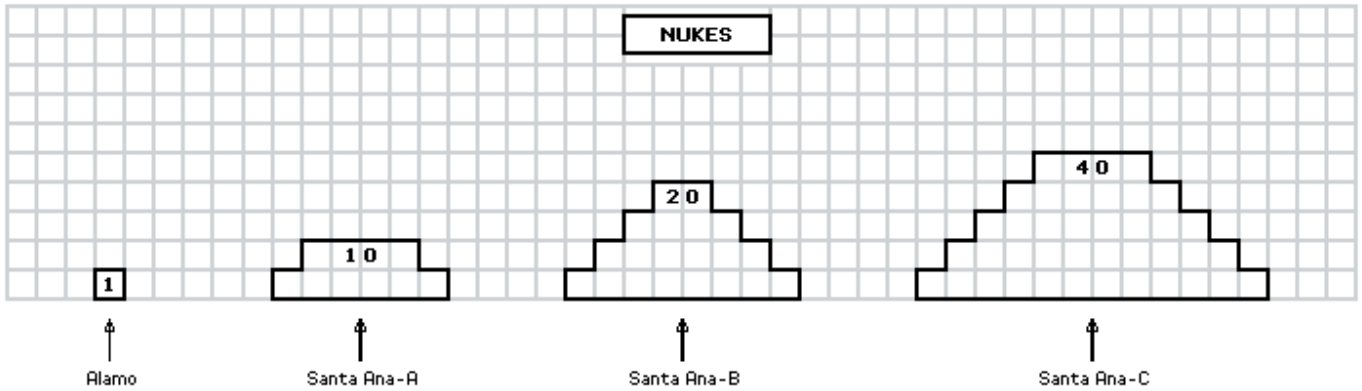
CAPITAL-SCALE DAMAGE TEMPLATES (CONT'D)



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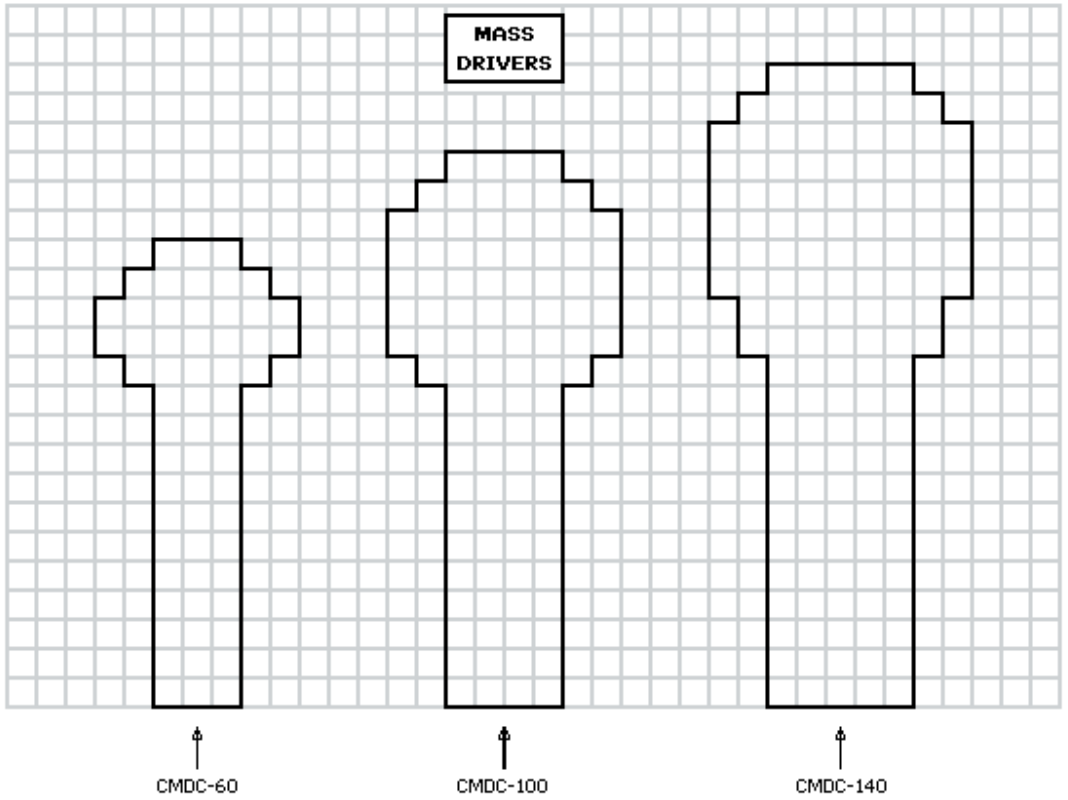

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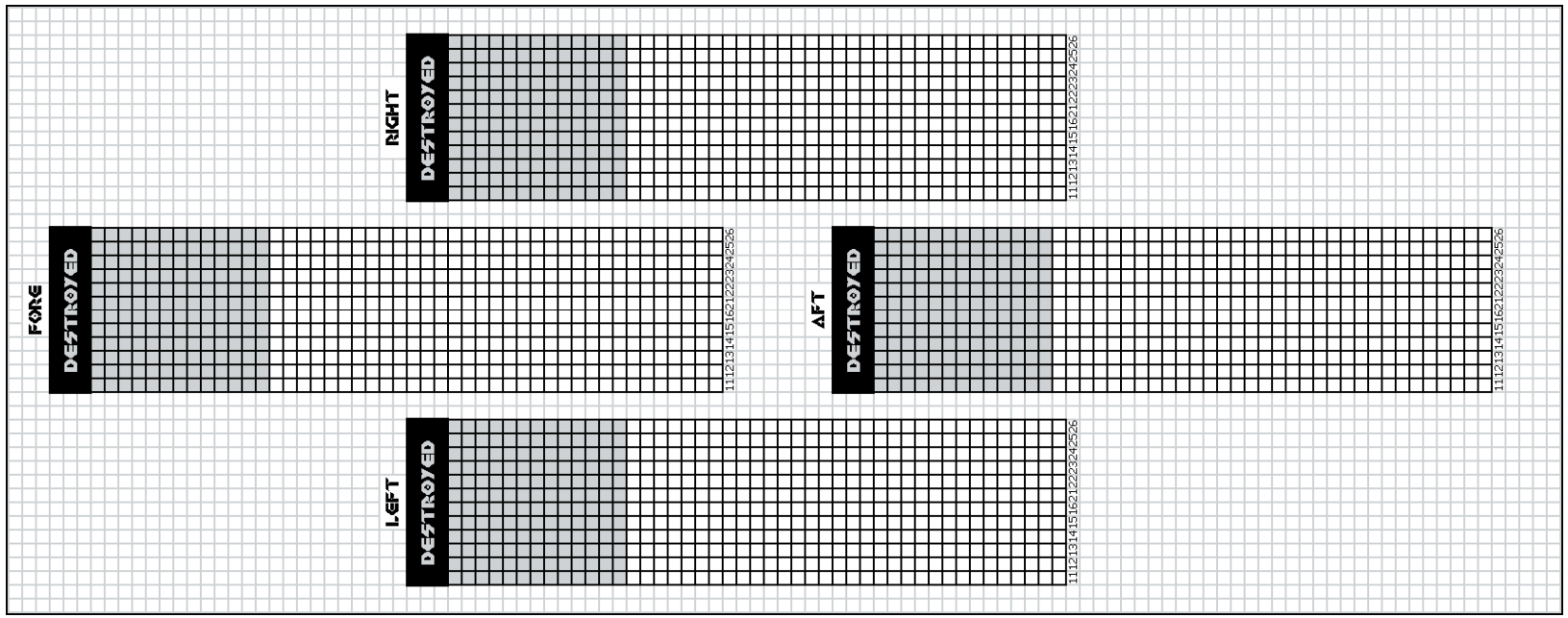
WARSHIP-SCALE ARMOUR DIAGRAMS
ESCORT



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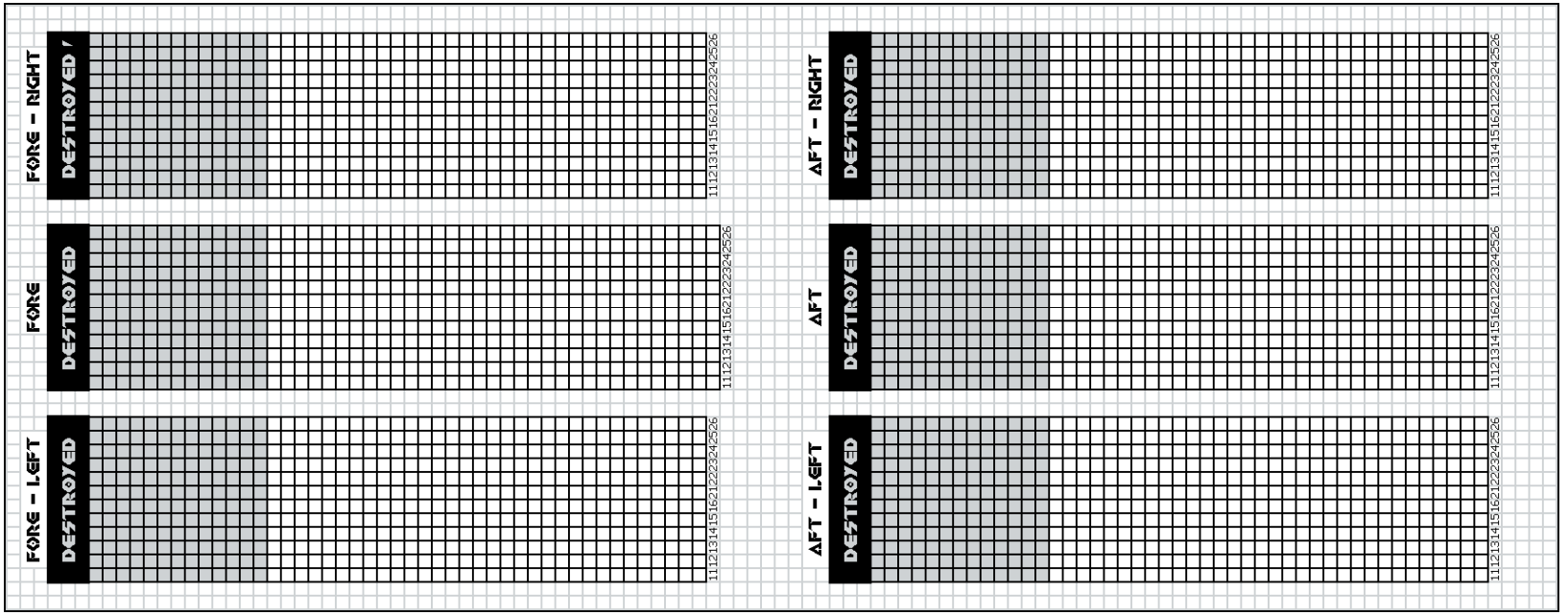
WARSHIP-SCALE ARMOUR DIAGRAMS
CRUISER



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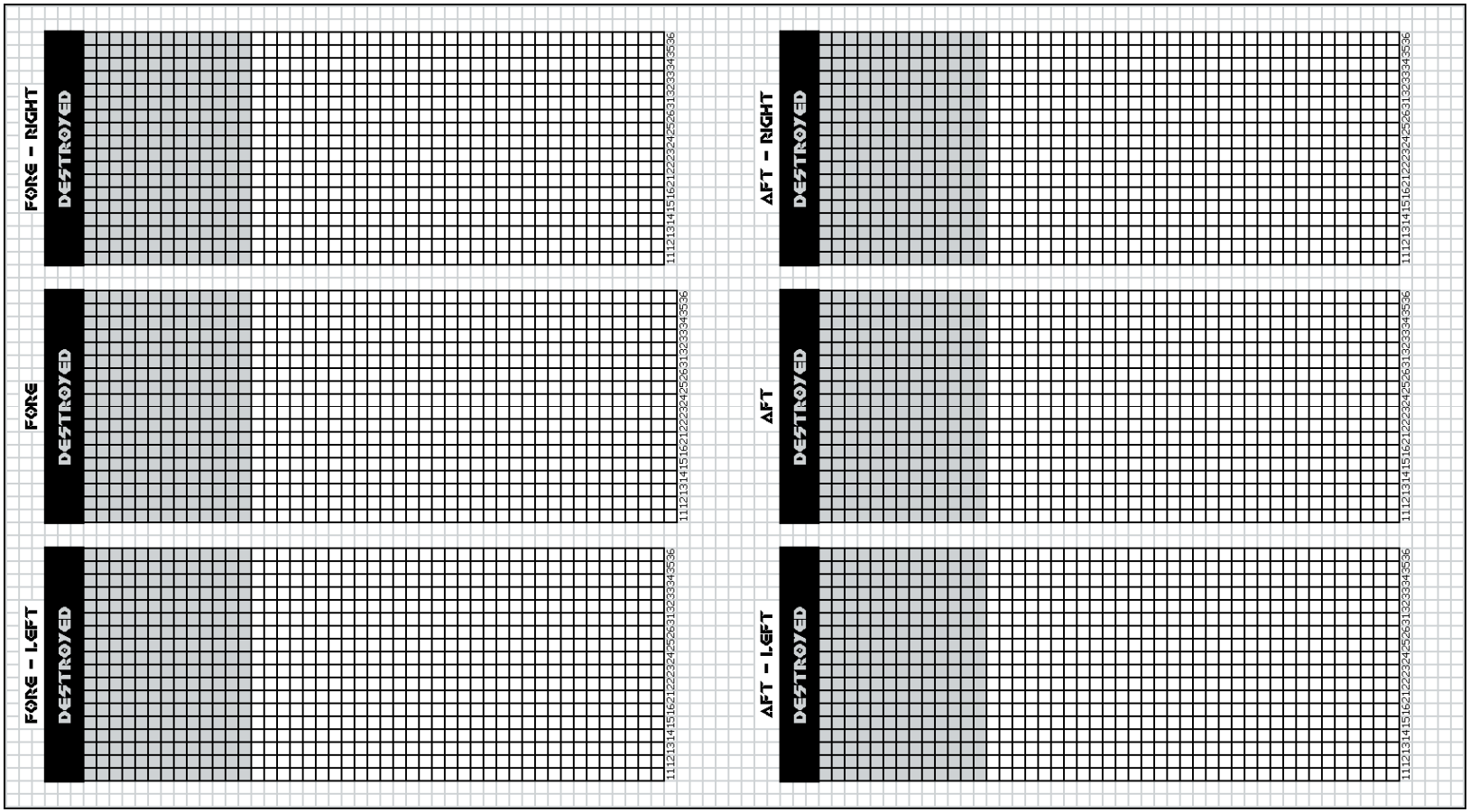

APPENDIX: PRE-WORKED XO/POINT-DEFENCE MISSILE CLUSTERS

	INTELLIGENCE	ECCM/ECM	RANGE
ATM/04 "Cyclops"	8	-2/+2	6
ATM/06 "Phoenix"	7	-2/+2	8
ATM/15 "Basilisk"	7	-3/+2	8
ATM/19 "Hydra"	7	-2/+3	10
ATM/22A "Griffin"	6	-3/+3	6
ATM/23C "Medusa"	6	-2/+2	10
ATM/28C "Minotaur"	5	-2/+3	12
ATM/34A "Manticore"	5	-3/+3	12

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APPENDIX: PRE-WORKED (SUB-)CAPITAL MISSILE CLUSTERS

CLUSTER SIZE ->	1 Missile	2 Missiles	3 Missiles	4 Missiles	5 Missiles	6 Missiles
	Warheads ECCM/ECM	Warheads ECCM/ECM	Warheads ECCM/ECM	Warheads ECCM/ECM	Warheads ECCM/ECM	Warheads ECCM/ECM
PIRANHA	1 -2/--	2 -3/+1	3 -3/+1	4 -4/+2	5 -4/+2	6 -5/+3
STINGRAY	3 --/+1	6 -1/+2	9 -1/+2	12 -2/+3	15 -2/+3	18 -3/+4
SWORDFISH	4 --/+2	8 -1/+3	12 -1/+3	16 -2/+4	20 -2/+4	24 -3/+5
BARRACUDA	3 -2/--	6 -3/+1	9 -3/+1	12 -4/+2	15 -4/+2	18 -5/+3
WHITE SHARK	4 --/+1	8 -1/+2	12 -1/+2	16 -2/+3	20 -2/+3	24 -3/+4
KILLER WHALE	6 --/+2	12 -1/+3	18 -1/+3	24 -2/+4	30 -2/+4	36 -3/+5

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