EC4X Player Manual

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Dedication

In memory of Jonathan F. Pratt.

Introduction

Welcome to EC4X, an asynchronous turn-based wargame of galactic conquest.

You are the Duke of an upstart House battling for dominance in a contested region of space. Your rivals seek the same prize: the imperial throne. Command your forces, expand your territory, crush your enemies, and seize the crown.

The year is 3000. The second Esterian Empire has collapsed. Reckless monetary policy, corrupt bureaucracies, and socialist excess bankrupted the old order. Revolution swept through the core worlds. The Emperor is dead. His heirs squabble over the ruins.

You lead one of the Great Houses rising from the ashes. Your mandate is absolute: conquer the region, subjugate your rivals, and establish the third imperium under your banner.

Strategic cycles operate on the Cipher Ledger—a quantum-entangled network embedded in jump lane stabilizers enabling instantaneous cryptographic settlement across interstellar space. Each cycle represents the time required to gather intelligence, coordinate operations, and consolidate control across your territory. In tight regional conflicts, cycles pass quickly (1-2 years). Sprawling multi-sector campaigns unfold over decades (10-15 years per cycle).

Turns cycle as soon as all players complete their orders, generally within 24 hours of real time. EC4X is intentionally slow burnâ€"strategic empire building, not tactical skirmishing.

The game automates tedious micromanagement. Squadrons form automatically. Fleets organize themselves. Construction queues process without constant attention. You command at the strategic levelâ€"issuing fleet orders, setting research priorities, allocating resources. The game handles tactical execution.

Chapter 1. 1.0 How to Play

Chapter 2. 1.1 Prestige

Victory in EC4X is achieved through prestige accumulation—the ultimate measure of your House's dominance. Command your path to the imperial throne:

- **Total Warfare**: Annihilate rival military assets through devastating fleet engagements
- **Planetary Conquest**: Seize homeworlds and colonies through invasion and occupation
- **Strategic Subjugation**: Break the spirit of your adversaries and compel their surrender
- **Covert Operations**: Blend military might with espionage, subversion, and cunning to outmaneuver your foes
- **Economic Dominance**: Focus on growth and expansion, using prosperity to overwhelm rivals
- **Last Man Standing**: Survive and eliminate all opposition
- **Hybrid Strategy**: Employ all methods simultaneously

Every action influences your House's prestige. Military victories enhance it directly. A prosperous and growing economy strengthens it. Technological advancements demonstrate your House's sophistication. All elevate your standing.

Poor colony management tarnishes your legacy. Exposure to rival covert operations leads to public disgrace. Diplomatic betrayal brings dishonor.

Flexibility and strategic foresight are your greatest tools. Use every resource and opportunity to crush your rivals and ensure your House's dominance.

You start the game with 50 prestige points.

If your House's prestige drops below zero and stays there for three consecutive turns, your empire enters Defensive Collapse and you are permanently eliminated. See Section 1.4 for complete elimination and autopilot mechanics.

2.1. Dynamic Prestige Scaling

The Challenge: Victory requires 2500 prestige. If prestige awards are fixed, small maps finish too quickly and large maps drag on forever.

The Solution: Prestige awards automatically scale based on map size.

How it works:

- **Small maps** (8-10 systems per player): You earn **full** prestige values listed in the tables → games last ~30 turns
- **Large maps** (30+ systems per player): You earn **scaled** prestige per action → games last ~60-80 turns

Why? More territory means more turns needed to conquer everything. Lower prestige per action on large maps means you need more victories to reach 2500, perfectly matching the longer

conquest timeline.

Example: On a small map, colonizing a planet awards 50 prestige. On a large map, the same action awards 20 prestige. Both maps reach 2500 prestige around the time all territory is conquered.

For You: The game calculates scaling automatically when the map generates. Larger maps mean longer campaigns—plan accordingly.

See Section 10.4 for mathematical details.

Chapter 3. 1.2 Game Setup

At game start, an admin spins up the game server. The server becomes your impartial arbiter—tireless, incorruptible, and instant. It processes turn orders, resolves conflicts, calculates economics, and maintains fog of war without human error or bias.

Localhost Mode (Tabletop Sessions):

Run the server on one machine. Everyone else connects from their laptops over the local network. You're gathered around the table, commanding your empires, while the server handles the tedious mathematics. No more spreadsheet errors. No more arguments about combat resolution. The machine does the bookwork; you make the decisions.

Nostr Mode (Remote Play):

Deploy the server anywhere with Nostr relay access. Your friends connect from across the world. Submit your turn orders at 3 AM or during lunch break—the asynchronous architecture doesn't care. The Nostr protocol provides cryptographic verification ensuring nobody tampers with turn submissions. When all players finish (or the 24-hour deadline expires), the server processes the next cycle automatically.

What The Server Handles:

The game server executes every tedious task a human moderator would handle:

- Processes turn orders from all Houses simultaneously
- Resolves space battles, invasions, bombardments, and espionage operations
- Calculates economic production, population growth, and prestige changes
- Advances construction projects and research investments
- Maintains separate intelligence databases—you see only what your scouts discover
- Issues customized reports showing your empire's status and gathered intelligence
- Enforces fog of war rigorously—no information leakage between players
- Tracks turn deadlines and activates autopilot for missing commanders

Map Generation:

Generate your star map using the tools provided in the GitHub repository (see Section 2.1). The server loads the map at game initialization. Map size determines prestige scaling automatically—larger maps mean longer campaigns.

Your Starting Position:

You begin with a foundation for empire:

Homeworld: Abundant Eden planet, Level V colony with 840 PU **Treasury**: 1000 production points (PP) **Infrastructure**: One spaceport, one shipyard **Industrial Capacity**: 420 IU (0.5 × PU) **Fleet**: Two Light Cruisers, two Destroyers **Colonization**: Two ETACs loaded with colonists **Scouts**: None—build

these immediately **Tax Rate**: 50% (you'll want to adjust this)

Starting Technology:

Your House begins at technology tier 1 across all domains: EL1, SL1, CST1, WEP1, TER1, ELI1, CIC1, FD I, ACO I. Every House starts equal. Your research priorities determine how quickly you advance. See Section 4.0 for tech effects and Section 10.11 for advancement costs.

Diplomacy & Communication:

The server processes orders mechanically but doesn't handle diplomacy. You negotiate alliances, betray pacts, and coordinate strategies through your preferred communication method—Discord, Signal, email, or face-to-face trash talk at the table. The server doesn't care how you scheme; it only processes the orders you submit. Diplomacy is between humans. The server just enforces the consequences.

Chapter 4. 1.3 Turns

Each turn comprises four phases:

1. Conflict Phase
2. Income Phase
3. Command Phase
4. Maintenance Phase

4.1. 1.3.1 Conflict Phase

At the beginning of each turn, the game server resolves all military actions from the previous turn. Combat, planetary bombardment, invasions, and espionage activities process automatically according to the rules engines.

This phase happens FIRST so damaged infrastructure affects production in the Income Phase. Bombarded planets produce less. Destroyed shipyards cannot build ships. Damaged starbases provide reduced bonuses.

Space battles, orbital bombardment, ground invasions, and espionage operations all resolve during this phase. Infrastructure damage applies to colonies, shipyards, and starbases before economic calculations.

4.2. 1.3.2 Income Phase

After conflict resolution, all economic factors (Section 3) are recalculated and production points deposited in your house treasury. Production calculates **after** conflict, accounting for infrastructure damage from bombardment or invasion.

This phase accounts for population growth at each colony, construction progress, maintenance costs, taxes, and R&D. Your House prestige points are recalculated and updated. The game server processes these calculations automatically using the master game state.

The server issues updated game state to each player for the new turn. Each House receives customized data showing only their own assets and gathered intelligence—fog of war is maintained automatically.

You receive new reports reflecting updated economics and the outcome of military orders issued in the previous turn. Access these reports through your game client.

In the new turn, you decide which construction orders to place and where to invest production points in R&D, industry, terraforming, population movement, espionage, and savings. You can change your tax rate during this phase. Your client updates your local game state accordingly.

4.3. 1.3.3 Command Phase

In the command phase, you issue fleet orders (Section 6.2) and make strategic decisions around asset management. You can change diplomatic status (Section 8.1) toward rival Houses.

Build orders may fail if shipyards were destroyed in the conflict phase. You issue fleet movement and colonization orders for execution in the next turn’s conflict phase.

You submit your turn orders to the game server. Once all players submit (or the turn deadline expires), the server processes the next turn cycle.

4.4. 1.3.4 Maintenance Phase

In the maintenance phase, the game server advances construction projects, applies repairs to damaged facilities, and processes upkeep costs. Fleet maintenance is deducted from your house treasury.

New construction orders process, along with investments in R&D, terraforming, Space Guild services, and industry.

The server updates game state and issues customized reports to each player. You receive your own unique intelligence database, blind to other players' activities.

Chapter 5. 1.4 Player Elimination & Autopilot

5.1. 1.4.1 Prestige Failure (Defensive Collapse)

If your House's prestige drops below zero and stays there for three consecutive turns, your empire enters **Defensive Collapse** and you are permanently eliminated.

Defensive Collapse Behavior:

- All your fleets immediately return to the nearest controlled system
- Your fleets defend colonies against attacks from Enemy-status houses per Section 8.1.4
- No offensive operations or expansion
- No new construction orders
- No diplomatic changes
- Economy ceases (no income, no R&D, no maintenance costs)

Your collapsed empire remains on the map as a defensive AI target. Other players can conquer your colonies and destroy your fleets for prestige as normal. Defensive Collapse is permanent—you cannot rejoin the game.

5.2. 1.4.2 MIA Autopilot

If you fail to submit orders for three consecutive turns, your empire automatically enters **Autopilot** mode. Unlike Defensive Collapse, autopilot is temporary and you can rejoin at any time.

Autopilot Behavior:

- Your fleets continue executing standing orders until completion
- Fleets without active orders patrol and defend home systems
- Your economy continues operating (current tax rate and R&D allocations maintained)
- Construction focuses on defensive infrastructure and essential facilities
- No new offensive operations or colonization attempts
- Diplomatic stances remain unchanged
- Engages Enemy-status houses that enter controlled territory per Section 8.1.4

When you return and submit new orders, your empire immediately exits autopilot and resumes normal operations.

Turn Processing:

- Autopilot activates in the Income Phase after the third consecutive missed turn per Section 1.3.2
- Autopilot orders execute during the Command Phase per Section 1.3.3

- You can resume control in any subsequent turn by submitting orders

5.3. 1.4.3 Standard Elimination & Last-Stand Invasions

Your House is eliminated from the game when you lose all colonies AND have no invasion capability remaining.

Elimination Triggers:

1. **Total Defeat**: No colonies AND no fleets
2. **Hopeless Position**: No colonies AND no marines for reconquest

Last-Stand Invasion Capability:

If you lose all your colonies but retain fleets with loaded marine divisions, you can attempt desperate reconquest operations:

- **Invasion Orders**: Target enemy colonies per Section 7.6
- **Blitz Operations**: Execute high-risk planetary assaults per Section 7.6.2
- **No Elimination**: Your House remains active as long as marines exist on transports
- **Empty Transports**: If you have only empty transports or non-combat ships, you are eliminated

Example Last-Stand Scenario:

House Atreides controls 15 systems. House Harkonnen launches a massive offensive and conquers all 15 colonies in a single turn. However, three Atreides troop transports carrying marine divisions survive the onslaught in deep space.

Result: House Atreides is NOT eliminated. On the next turn, they can attempt invasion/blitz operations with their surviving marines. If they successfully recapture even one colony, they're back in the game. If all marines are killed in failed invasions, THEN they're eliminated.

This creates dramatic comeback opportunities and rewards players who maintain mobile invasion forces even when losing territory.

5.4. 1.4.4 Victory Conditions

You achieve victory by reaching 2500 prestige or by being the last active player in the game.

- **Active Players**: Players submitting orders (not in autopilot or defensive collapse)
- **Autopilot Players**: Count as active and can return to win
- **Defensive Collapse Players**: Eliminated, do not count toward victory
- **Last-Stand Players**: Count as active until final elimination

A player in autopilot can still win through prestige accumulation if their empire's defensive economy generates sufficient prestige growth.

Final Conflict Rule:

When only two active players remain in the game (excluding Defensive Collapse and Autopilot empires), their diplomatic status automatically converts to Enemy per Section 8.1.4 and cannot be changed. Non-Aggression Pacts dissolve. Neutral status cannot be established. There can be only one Emperor—the final two houses must fight for the throne. This rule takes effect at the start of the Income Phase when the condition is detected.

Chapter 6. 1.5 Intelligence & Fog of War

EC4X employs fog of war mechanics where you have limited visibility into rival empires' activities. Intelligence gathering is critical for strategic planning and tactical operations.

6.1. 1.5.1 Fleet Encounters and Intelligence

When your fleets encounter forces from different houses in the same system, intelligence is automatically gathered regardless of diplomatic status or whether combat occurs.

Automatic Intelligence Reporting:

Whenever your friendly fleets are present in the same system as foreign forces, you receive **Visual quality** intelligence reports containing:

- Fleet composition (ship types and squadron sizes)
- Number of spacelift ships (transport count)
- Standing orders (Patrol, Guard, Blockade, etc.)
- Fleet location (current system)

Visual Intelligence Limitations:

Visual quality intelligence does NOT reveal:

- □ Tech levels (always shows as 0)
- □ Hull integrity/damage status
- □ Cargo contents of transport ships (only count visible)

This represents tactical observation—you can see what ships are present and their behavior, but not their technological sophistication or strategic cargo.

Intelligence Quality Levels:

EC4X uses four intelligence quality tiers:

1. **Visual** (Regular Fleets) - Basic tactical observation, ship types visible but not tech/damage
2. **Spy** (Espionage Operations) - High-quality intel with tech levels, hull status, economic data
3. **Perfect** (Scouts & Owned Assets) - Complete accuracy, all details, real-time updates
4. **None** (Fog of War) - No intelligence available

See Section 9.3 for complete quality level specifications.

Intelligence Collection Scenarios:

You gather intelligence in all of the following situations:

- **Patrol operations**: Visual quality fleet intel per Section 6.2.4

- **Fleet movement**: Visual quality intel when passing through systems with foreign forces
- **Combat engagements**: Perfect quality intel revealed pre-combat for all participants
- **Scout reconnaissance**: Perfect quality intel from missions per Section 6.2.9-6.2.12
- **Espionage operations**: Spy quality intel from SpyOnPlanet, SpyOnSystem, HackStarbase

Diplomatic Status Independence:

You gather intelligence regardless of diplomatic relationships:

- Enemy forces: Intelligence gathered, combat may occur
- Neutral forces: Intelligence gathered, no combat
- Non-Aggression partners: Intelligence gathered, no combat (unless pact violated)

This reflects the reality that military forces cannot remain completely hidden when operating in the same system, even if diplomatic protocols prevent engagement.

Intelligence Reports:

All intelligence is stored in your house's intelligence database with timestamps. See [Section 9](intelligence.md) for complete intelligence system documentation including:

- Report types and contents
- Intelligence corruption from disinformation/dishonor
- Staleness indicators
- Strategic use of intelligence

6.2. 1.5.2 Fog of War

You do not have automatic visibility into:

- Rival empire economics (income, production, treasury)
- Rival empire technology levels (requires espionage per Section 8.2)
- Fleet movements in systems without your friendly presence
- Colony development and construction projects
- Strategic intentions and future orders

The game server maintains separate intelligence databases for each house to preserve fog of war. You must actively gather intelligence through fleet operations, scout missions, and espionage activities. The server ensures you see only what your House has legitimately discovered—no information leakage between players.

Chapter 7. 2.0 Game Assets

Chapter 8. 2.1 Star Map

The star-map consists of a 2D hexagonal grid, each a flat-top hex that contains a solar system, interconnected throughout by procedurally generated jump lanes. The map is sized by rings around the center hub: one ring per player plus the center hub system at ring 0. For example, a 4-player game has 4 rings (rings 1-4) plus the center hub at ring 0. The center hub is guaranteed to have six lanes of travel.

Solar systems have special traits and are procedurally generated. They are filled with planets, moons, and gas giants that are variable in their suitability for colonization and production.

Jump Lane Classes

There are three classes of jump lanes that determine which ship types can traverse them:

- **Major lanes** (50% of all lanes): Allow all ship types including crippled ships, ETACs, and troop transports
- **Minor lanes** (35% of all lanes): Block crippled ships only; all other ships may pass
- **Restricted lanes** (15% of all lanes): Block crippled ships, ETACs, and troop transports

This distribution ensures 85% of lanes allow colonization ships through, reducing strategic bottlenecks while maintaining tactical complexity. Movement across the lanes is explained in Section 6.1.

Hub Connectivity

The hub is guaranteed to have six jump lanes connecting it to the first ring, making it an important strategic asset. Hub lanes use the same distribution as the rest of the map (mixed lane types), preventing predictable "rush-to-center" gameplay. Controlling the hub grants significant strategic power but requires careful fleet composition.

Homeworld Placement

Player homeworlds are placed throughout the map using distance maximization algorithms. The generator ensures each homeworld is as far as strategically possible from rival home systems, creating balanced starting positions while introducing natural asymmetry in the tactical landscape. Unlike traditional hex-ring maps where homeworlds are predictably on the outer edge, this system allows homeworlds on any ring for unpredictable, varied starting scenarios.

Each homeworld is guaranteed to have exactly 3 **Major lanes** connecting it to adjacent systems, ensuring reliable colonization paths and fleet movement from the start.

Chapter 9. 2.2 Solar Systems

Solar systems contain various F, G, K, and M class stars orbited by at least one terrestrial planet, suitable for colonization and terraforming. Systems without terrestrial planets are not charted and of no consequence to your task.

Roll on the planet class and system resources tables below to determine the attributes for each hex on the star-map, excluding homeworlds.

Each newly established colony begins as Level I and has potential to develop into the max Population Unit (PU) for that planet. Move colonists from larger colonies to smaller colonies to increase population growth over the natural birth rate.

Advances in terraforming tech allow your planets to upgrade class and living conditions. For terraforming research and costs, see Section 4.6.

Planet Class Table

Roll 1D10	Class	Colony Potential	PU	PTU
0	Extreme	Level I	1 - 20	1 - 20
1	Desolate	Level II	21 - 60	21 - 60
2, 3	Hostile	Level III	61 - 180	61 - 182
4, 5	Harsh	Level IV	181 - 500	183 - 526
6, 7	Benign	Level V	501- 1k	527 - 1,712
8*	Lush	Level VI	1k - 2k	1,713 - 510,896
9**	Eden	Level VII	2k+	510,896+

*If the roll above is a natural eight (8), add a +1 modifier to your roll on the System Resources Table. **If the roll is a natural nine (9) add a +2 modifier.

For the relationship between PU and PTU, including economic implications and formulas, see Section 3.1.

System Resources Table

Modified Roll 1D10	Raw Materials
0	Very Poor
2, 3	Poor
4 - 7	Abundant
8, 9	Rich
10+	Very Rich

For how Raw Materials affect colony economic output, see the RAW INDEX table in Section 3.1.

Chapter 10. 2.3 Military

10.1. 2.3.1 Space Force Ships

The base game includes a number of imperial classed space combatants listed in Section 10.1.

10.2. 2.3.2 Spacelift Command

Spacelift Command provides commerce and transportation services supporting your House's expansion efforts. You own these assets, and senior Space Force officers command them. Loyal House citizens crew and operate the units.

Spacelift assets have no offensive weapons capability—unescorted units are easily destroyed by rival forces.

Spacelift Command attributes are listed in Section 10.3.

10.2.1. 2.3.2.1 Spaceports

Spaceports are large ground based facilities that launch heavy-lift ships and equipment into orbit. They require one month (one turn) to build and have five construction docks at base capacity, allowing up to five simultaneous ship construction projects planet-side.

Construction Cost: 20 PP **Construction Time**: 1 turn **Base Capacity**: 5 docks **Capacity Scaling**: Dock capacity increases with CST tech (see Section 4.5)

Planet-side Ship Construction: Ships built at spaceports incur a **100% PP cost penalty** due to orbital launch requirements. See Section 5.2 for construction rules.

Spaceports cannot repair ships - they are construction facilities only.

10.2.2. 2.3.2.2 Shipyards

Shipyards are gateways to the stars—large bases constructed in orbit that require a spaceport to build over a period of two turns.

The majority of your ship construction and repair occurs at these important facilities.

Construction Cost: 60 PP **Construction Time**: 2 turns **Prerequisite**: Requires operational Spaceport **Base Capacity**: 10 docks **Capacity Scaling**: Dock count increases with Construction (CST) technology (see Section 4.5)

Shipyards are equipped with docks for both construction and repair, and are fixed in orbit. Build multiple yards to increase your construction capacity at the colony.

Orbital Ship Construction: Ships built at shipyards use standard PP costs with no penalties. See Section 5.4.

Ship Repairs: Only shipyards can repair ships. Repair costs 25% of ship's original PP cost and

completes in 1 turn. See Section 5.5.

10.2.3. 2.3.2.3 Environmental Transformation And Colonization (ETAC)

ETACs plant a seed by establishing colonies on uninhabited planets. They may be reused but require PTU reload.

Carry Limit (CL): 1 PTU at STL I, scales with Strategic Lift (STL) technology **Lane Restrictions**: Blocked by Restricted lanes (15% of lanes) **Combat**: Zero offensive/defensive capability

You must load ETACs with colonists before departure. For STL capacity progression, see Section 4.9.

10.2.4. 2.3.2.4 Troop Transports

Troop Transports are specialized ships that taxi Space Marine divisions between solar systems, along with their required combat gear, armored vehicles, and ammunition.

Carry Limit (CL): 1 Marine Division (MD) at STL I, scales with Strategic Lift (STL) technology **Lane Restrictions**: Blocked by Restricted lanes (15% of lanes) **Combat**: Zero offensive/defensive capability

For STL capacity progression, see Section 4.9.

10.3. 2.3.3 Squadrons

Your Space Force is organized by squadrons. Each squadron is commanded by a flagship with a Command Rating (CR) that accommodates ships with a Command Cost (CC) summing to less than or equal to the CR. This enables you to tactically group various classes of ships to balance combat effectiveness.

Squadrons fight as a unit and die as a unit. A squadron's total AS and DS values constitute a sum of all the ships under a flagship's command (including itself).

In non-hostile systems, you can reassign ships in a squadron to an already existing squadron if the new flagship's CR allows. Squadrons can constitute a solo flagship.

You can only commission squadrons in systems with a functioning shipyard.

Command Rating Enhancement: CR can be increased through Command (CMD) research. See Section 4.10 for CMD progression.

10.4. 2.3.4 Fleets

You group squadrons together into fleets for traversing jump lanes. You can join or split fleets (creating new fleets) for strategic purposes in any non-hostile system. There is no limit to the number of squadrons you assign to a fleet.

10.5. 2.3.5 Task Force

A Task Force is temporary grouping of squadrons organized for combat. After hostilities cease, the task force is disbanded and surviving squadrons return to their originally assigned fleets.

Chapter 11. 2.4 Special Units

11.1. 2.4.1 Fighter Squadrons & Carriers

Fighters are small ships you commission in Fighter Squadrons (FS) that freely patrol a system. They're based planet-side and never retreat from combat. Fighters are glass cannons—cheap to build but pack a punch.

Construction Cost: 5 PP per squadron **Maintenance Cost**: Zero

Capacity Limits:

Fighter Squadron capacity per colony is determined by population size, Fighter Doctrine (FD) research, and Starbase infrastructure:

```
Max FS per Colony = max(1, floor(PU / 100)) x FD_MULTIPLIER
```

Infrastructure Requirement: 1 operational Starbase per 5 FS (rounded up)

For FD research progression and capacity multipliers, see Section 4.12. For economic and strategic considerations, see Section 3.6.

Carrier Operations:

Fighter Squadrons can be loaded onto carriers for mobility:

Standard Carrier (CV):

- ACO I: 3 FS capacity
- ACO II: 4 FS capacity
- ACO III: 5 FS capacity

Super Carrier (CX):

- ACO I: 5 FS capacity
- ACO II: 6 FS capacity
- ACO III: 8 FS capacity

For Advanced Carrier Operations (ACO) research, see Section 4.13.

Combat Mechanics:

Fighter squadrons based at your colony automatically participate in orbital defense (see Section 7.4). Carrier-based fighters participate in space combat with their carrier's task force.

Each FS contributes:

- **Attack Strength (AS)**: 3

- **Defense Strength (DS)**: 1

Fighters are fragile but cost-effective. A mature colony can field dozens of squadrons, making direct assault prohibitively expensive.

11.2. 2.4.2 Scouts

Scouts are fast, stealthy reconnaissance ships that gather intelligence on enemy fleet compositions, colony defenses, and strategic positions.

Detection Mechanics:

Enemy colonies equipped with Electronic Intelligence (ELI) technology can detect Scouts. Detection probability depends on:

- Defender's ELI level
- Number of Scouts in system (mesh network effect)
- Presence of Starbases (+2 ELI modifier)

Scout Detection Table

Detection compares total effective ELI (including modifiers) against number of Scouts present:

Defender ELI	1 Scout	2 Scouts	3+ Scouts
ELI 1	1-2	1-3	1-4
ELI 2	1-3	1-4	1-5
ELI 3	1-4	1-6	1-8
ELI 4	1-6	1-8	1-10
ELI 5	1-8	1-10	1-12

Table shows detection threshold on 1D20. Roll equal or higher to detect.

Mesh Network Effect: Multiple Scouts in the same system improve detection resistance. The defender's effective ELI decreases as Scout count increases—Scout swarms are harder to detect than individual Scouts.

Starbase Modifier: Starbases add +2 to effective ELI level for detection rolls, representing superior sensor arrays and dedicated detection systems.

For ELI research progression, see Section 4.8.

Intelligence Gathering:

Successfully undetected Scouts reveal:

- Fleet composition and squadron organization
- Colony defense strength (fighters, batteries, shields)

- Industrial capacity (IU count)
- Construction projects in progress

Detected Scouts are immediately destroyed.

11.3. 2.4.3 Raiders

Raiders are specialized covert warfare vessels equipped with advanced cloaking systems. They conduct sabotage, intelligence gathering, and disruptive operations deep behind enemy lines.

Cloaking Technology:

Raider stealth capability is determined by Cloaking (CLK) research level. Higher CLK tiers significantly reduce detection probability.

Detection Mechanics:

Enemy colonies equipped with Electronic Intelligence (ELI) technology can detect Raiders. Detection rolls compare the Raider's CLK level against the defender's ELI level.

Raider Detection Table

Detection compares Raider CLK vs. Defender ELI:

ELI \ CLK Advantage	>10-12	7-9	4-6	1-3	Equal	-1 to -3	-4 to -6	-7 to -9	←10 to -12
Detection Roll	1D3	1D4	1D6	1D8	1D10	1D12	1D16	1D20	Auto-Fail

Roll type determines detection threshold on 1D20. Example: 1D3 result is random number 1-3; if detection roll ≥ threshold, Raider is detected.

Starbase Modifier: Starbases add +2 to effective ELI level for detection rolls against Raiders.

Example Detection Scenario:

```
Defender Colony:
  ELI 3
  2 operational Starbases
  Starbase Modifier: +2
  Total Effective ELI: ELI 3 + 2 = ELI 5

Raider:
  CLK 4

ELI Advantage: ELI 5 - CLK 4 = +1
Detection Threshold: From table, use 1-3 range, so roll 1D8
```

```
Random Threshold Roll (1D8): Result is 5
Detection Roll (1D20): If the roll is 5 or higher, the Raider is detected
```

For CLK research progression, see Section 4.7. For ELI research, see Section 4.8.

Mission Capabilities:

Successfully undetected Raiders can:

- **Sabotage**: Destroy Industrial Units, reducing GCO
- **Infrastructure Damage**: Target spaceports, shipyards, or starbases
- **Intelligence**: Reveal detailed colony information beyond Scout capability
- **Assassination**: Eliminate colony governors or military commanders (advanced missions)

Detected Raiders are immediately destroyed.

Strategic Considerations:

Raiders are expensive, fragile, and require sustained CLK investment to remain effective. However, they create asymmetric advantages—a single successful Raider mission can cripple an enemy industrial world, potentially shifting strategic balance. The CLK vs. ELI arms race becomes critical in peer conflicts.

11.4. 2.4.4 Starbases

Starbases (SB) are powerful orbital fortresses that facilitate planetary defense and economic development via ground weather modification and advanced telecommunications.

Construction:

Cost: Varies by WEP level (see Section 10.0) **Construction Time**: 3 turns **Prerequisite**: Requires operational Shipyard **Mobility**: Fixed in orbit, cannot move out of home system

Detection Capabilities:

Starbases are equipped with ELI to counter spy Scouts and Raiders. Refer to the Scout Detection Table in Section 2.4.2 and Raider Detection Table in Section 2.4.3 respectively.

Starbases receive a **+2 ELI modifier** for all detection rolls, reflecting their superior sensor arrays and dedicated detection systems.

Combat Participation:

Starbases participate in detection for ALL combat phases occurring in their system:

- **Space Combat** (Section 7.3): Starbases contribute detection capability but are screened from combat (cannot fight or be targeted)
- **Orbital Combat** (Section 7.4): Starbases detect AND fight as primary orbital defenders

Rationale: Advanced sensors provide system-wide detection support; physical weapons only engage threats to your colony itself.

Economic Benefits:

Starbases boost both **population growth rate** and **industrial production output** by 5% per operational starbase, with each benefit capped at 15% maximum (three starbases).

Population Growth Bonus:

- +5% per operational starbase, max +15% (3 starbases)
- Example: Natural birthrate 2% → With 3 starbases: 2% × (1 + 0.15) = 2.3%
- Applied in population growth formula in Section 3.5

Industrial Production Bonus:

- +5% per operational starbase, max +15% (3 starbases)
- Applied to IU component of GCO formula: `IU x EL_MOD x CST_MOD x (1 + PROD_GROWTH + STARBASE_BONUS)`
- Example: 100 IU base output → With 3 starbases: 100 × (1 + 0.15) = 115 output
- See Section 3.1 for complete GCO formula

Fighter Squadron Infrastructure:

- Required for fighter squadron operations: 1 Starbase per 5 FS
- See Section 3.6 for fighter capacity rules

Repair:

Crippled starbases yield no benefits until you repair them. Repair costs 25% of original PP cost, requires 1 turn at a Shipyard. See Section 5.5.

Crippled starbases don't count toward fighter squadron infrastructure requirements—you must repair or build additional starbases to maintain full FS capacity.

11.5. 2.4.7 Planetary Shields & Ground Batteries

Planetary Shields (PS) and Ground Batteries (GB) are planet based assets that provide an extra layer of defense to a player's colonies.

Planetary Shields:

Planetary Shields protect your colonies from orbital bombardment. With increasing Shield (SLD) levels, they have a higher probability of absorbing direct hits and become more powerful.

Construction: Requires SLD research (see Section 4.4) **Cost**: Varies by SLD level **Limit**: One shield per colony **Upgrading**: Requires salvaging old shield (50% refund) and building new shield at higher SLD tier

For SLD research progression, absorption percentages, and shield DS values, see Section 4.4.

You can rebuild shields within one turn if destroyed.

Ground Batteries:

Ground Batteries are static defense units positioned on your planet's surface. They serve as a deterrent against enemy fleets and support planetary defense during bombardment and invasion. They lob kinetic shells into orbit—technology and research don't upgrade them.

Construction Time: 1 turn **Quantity Limit**: No limit—you can build as many as you can afford **Technology**: Static stats, no WEP scaling

Ground Batteries are the only units that construct in a single turn.

For bombardment mechanics and how shields/batteries interact, see Section 7.5.

11.6. 2.4.8 Planet-Breaker

Planet-Breakers (PB) are high-technology, late-game siege superweapons designed to shatter even the most heavily fortified colonies. These colossal warships mount weapons that completely bypass conventional planetary shield matrices—the ultimate answer to defensive stalemates.

Technology & Construction Requirement:

Prerequisite: CST 10 (see Section 4.5) **Construction Cost**: 400 PP **Construction Time**: 1 turn **Construction Location**: Requires Shipyard

No additional research is required beyond the shipyard tech itself.

Ownership Limit:

You may construct and operate **no more than one Planet-Breaker per currently owned colony** (your homeworld counts as one colony).

If you lose a colony (conquered, abandoned, or destroyed), any Planet-Breaker assigned to it is immediately and permanently scrapped with no salvage value.

Shield Penetration Mechanics:

Planet-Breakers completely ignore planetary shields during bombardment (SLD 1–6 offer no protection). Their firepower is applied directly to ground batteries and other surface targets.

Bombardment Operations:

During planetary bombardment (Section 7.5):

- Resolve Planet-Breaker AS separately from conventional ships
- Planet-Breaker hits bypass shields entirely and strike ground batteries directly
- Conventional ships in the same Task Force are still subject to normal shield rolls

Space Combat:

Planet-Breakers use their normal combat statistics (AS 50, DS 20) in fleet battles. They are fragile for their cost and require strong escorts.

Strategic Considerations:

Planet-Breakers force defenders into a classic dilemma: invest in shields (useless vs. PBs) or mass ground batteries (effective vs. everything). They are the ultimate prize of late-game conquest and terraforming—the larger your empire, the more of these terrifying weapons you can field.

Defensive Counters:

- Destroy them in space before they reach orbit
- Focus fire—crippled Planet-Breakers lose their bombardment advantage and become priority targets (×2 weight when crippled)
- Conquer the enemy's core worlds to permanently strip their PB count

11.7. 2.4.9 Space Marines & Armies

Space Marines are ferocious devil dogs that capture rival planets. They deploy in division sized units (MD) and never surrender or abandon one of their own.

You drop Marines on rival planets by troop transports during an invasion or blitz.

Armies (AA) garrison your colonies and eradicate invaders. Their orders are to take no prisoners and protect your colony at all cost.

Marines fight alongside your Army if garrisoned planet-side.

For ground combat mechanics, see Section 7.6.

Chapter 12. 2.5 Space Guilds

A vast decentralized network of trade, commerce, transport, industry, tech, and mining activities occur between and within your House colonies, facilitated by the Space Guilds. Most of this activity is abstracted away and occurs in the background of EC4X's strategic focus. Guild ships stealthily ply the jump lanes between colonies without interaction or communication with your military assets.

Numerous Space Guilds compete for business in unregulated, private capital markets. The Space Guilds are neutral non-player-characters (NPC) with zero loyalty to any House.

You contract the Guilds to provide various critical services to your House, most notably the transport of PTU and goods between colonies. Space Guilds are also known to deal in the black arts of subversion and subterfuge, for a price. They will not freely leak intelligence.

12.1. 2.5.1 Capital Ship Salvage Operations

When a Great House loses industrial capacity and can no longer support its capital fleet, the Space Guilds step in to claim excess warships. The Guilds pay 50% of the original build cost in immediate currency, then refurbish and resell these vessels on the open market for profit.

Capacity Formula: Each house can maintain `max(8, floor(Total_House_IU ÷ 100) x 2)` capital squadrons. Capital ships are defined as vessels with Command Rating (CR) ≥ 7.

For detailed capacity rules and economic implications, see Section 4.11.

Enforcement: When a house exceeds its capital squadron capacity (typically due to IU loss from colony damage, blockades, or territory loss), excess squadrons are immediately claimed by the Space Guilds. Priority for removal:

1. **Crippled flagships first** - Damaged vessels are easiest to claim
2. **Lowest Attack Strength (AS) second** - Among non-crippled ships, weakest vessels removed first

The house receives 50% of each ship's original build cost as salvage payment, credited to the house treasury.

Strategic Implications:

- You must maintain industrial capacity to support large fleets
- Losing colonies means losing fleet capacity
- Salvage payments soften the blow but don't fully compensate for ship loss
- Crippled ships are vulnerable to involuntary salvage
- Repair your crippled flagships quickly to avoid losing them

Reference: See Table 10.5 for complete squadron limit details.

Chapter 13. 3.0 Economics

Reckless fiat monetary policy left the former Empire in ruins. Demagoguery, excessive money printing, deficit spending, out of control socialist entitlements, and simple greed by bureaucratic elites led directly to revolution and collapse. The Empire cannibalized itself from the inside out. As Duke, your obligation is to rebuild from the ashes and lead your House to prosperity.

The standard unit of account in EC4X is the Production Point (PP).

The economic power of your House is fueled by productivity, industrial capacity, and technological growth. Your strategic decisions around taxation, industrial investment, and research & development (R&D) directly impact your economic output and military strength.

Production points settle instantaneously through the Cipher Ledger - a cryptographic network operating on quantum-entangled nodes embedded in jump lane stabilizers. Houses mint blind-signature PP tokens that route through secure lane channels, enabling instant private settlement while maintaining complete opacity to rival intelligence agencies.

Chapter 14. 3.1 Principles

Population Unit (PU): The productive capacity of a colony's population, measured in abstract economic units rather than raw headcount.

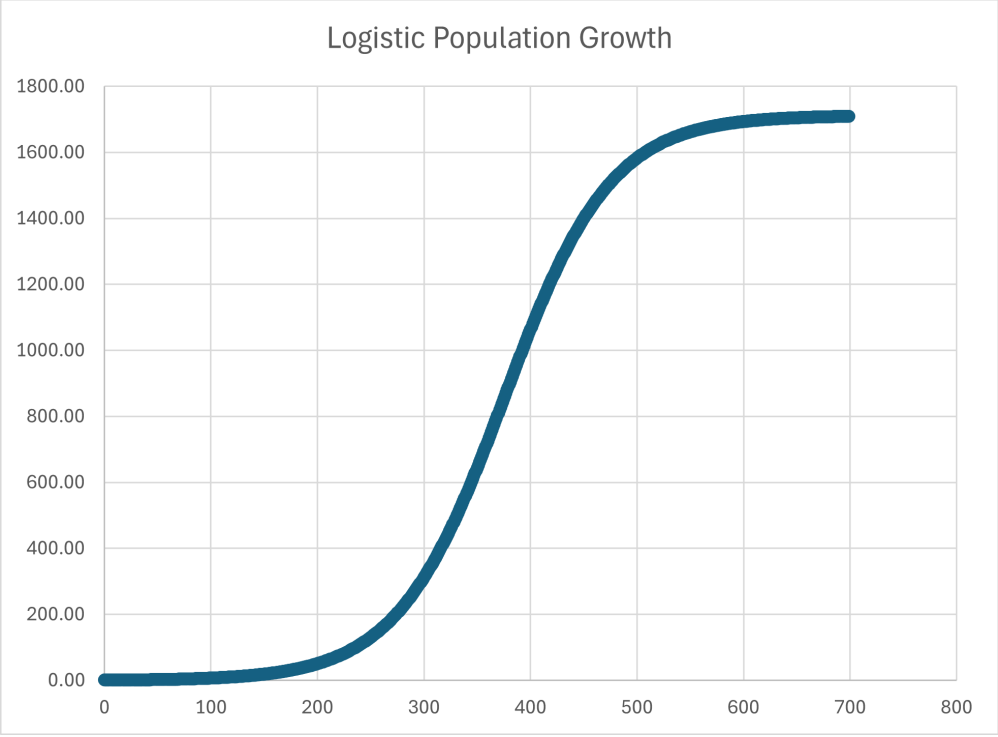
Population Transfer Unit (PTU): The number of people required to generate one PU of productive capacity. As colonies grow larger, diminishing returns mean more people are needed per unit of production - efficiency gains, quality of life improvements, and specialization mean individuals produce less marginal output even as total wealth grows. One PTU represents approximately 50,000 souls.

The PTU-to-PU ratio increases exponentially with colony size. Small colonies are highly efficient - each PTU you send generates substantial PU. Large colonies suffer diminishing returns - adding more people yields proportionally less production.

Strategic consequence: Transferring colonists from mature worlds to new colonies is advantageous. The mother world loses relatively few PUs while the daughter colony gains significant productive capacity. This incentivizes colonial expansion rather than concentrating population on homeworlds.

For planet classification and maximum PU capacity by planet class, see Section 2.2.

The relationship between PU and PTU is exponential. As the population grows the laws of diminishing returns take effect and the amount of production generated per individual is reduced. People are doing less work while the colony continues to slowly gain wealth. Think of gains in efficiency, productivity, and quality of life.



This model is dis-inflationary; inflation asymptotically approaches zero over time.

A high PTU to PU ratio is an advantage when transferring colonists from larger planets to smaller

planets. The mother-colony is able to contribute a relatively large number of people to the new colony without a significant loss of production to itself.

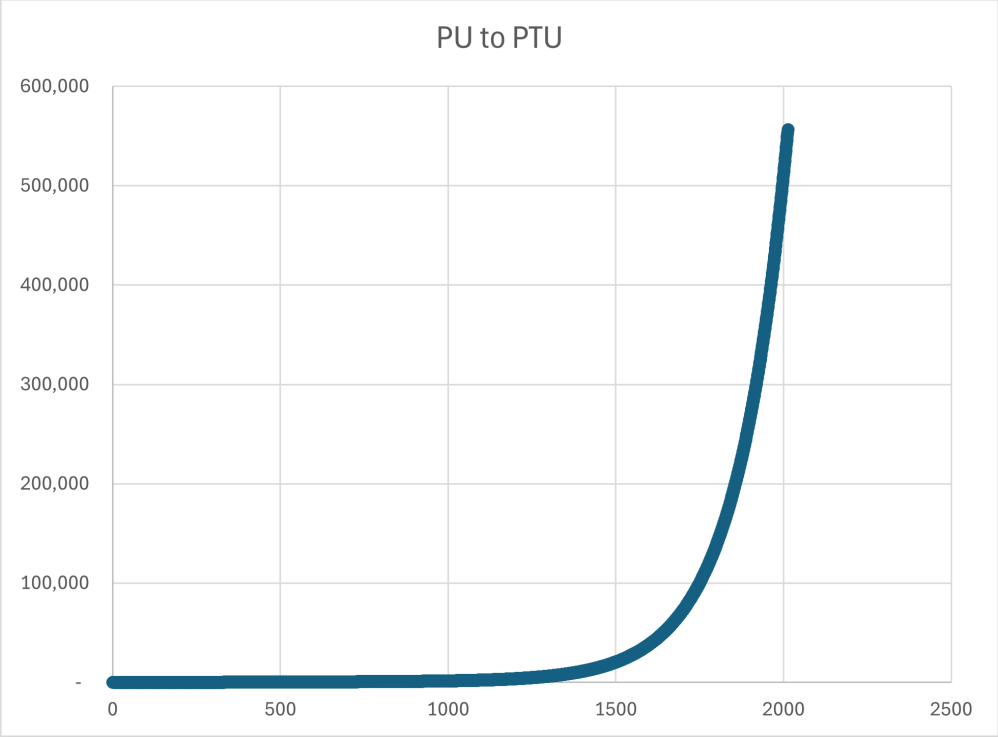
The equations (in Python) for converting PU to PTU:

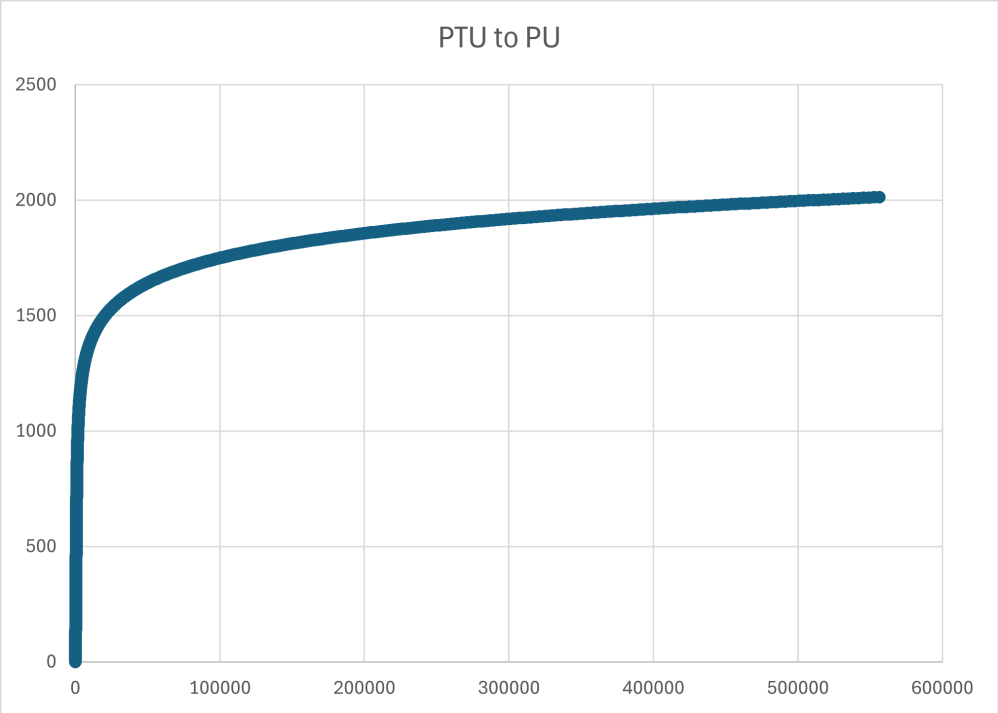
```
PTU = pu - 1 + np.exp(0.00657 * pu)
```

Code for converting PTU back to PU:

```
import numpy as np
from scipy.special import lambertw

PTU = 100000 #example

def logsumexp(x):
    c = x.max()
    return c + np.log(np.sum(np.exp(x - c)))

x = np.float64(657*(PTU + 1)/100000)

pu = -100000/657*lambertw((657*np.exp(x - logsumexp(x)))/100000) + PTU + 1
```

An Excel spreadsheet is included in the GitHub 'assets' folder to visualize the relationship. You need to have "Python in Excel" enabled for Excel. TODO: standalone Python scripts will be provided in the repo.





Gross Colony Output (GCO): The total economic output of a colony, expressed in production points. GCO is determined by the productivity of the colony, industrial investments, resource availability, and technological enhancements.

```
GCO = (PU x RAW_INDEX) + (IU x EL_MOD x CST_MOD x (1 + PROD_GROWTH))
```

Where:

- PU: Population Units of the colony
- RAW_INDEX: Resource quality index based on the solar system's mineral abundance.
- CST_MOD: Construction tech capacity modifier = 1.0 + (CST_level - 1) × 0.10
- IU: Industrial Units at the colony
- EL_MOD: Economic Level Modifier, based on the colony's EL tech level
- PROD_GROWTH: Productivity growth rate influenced by the tax rate

RAW INDEX Table

RAW	Eden	Lush	Benign	Harsh	Hostile	Desolate	Extreme
Very Poor	60%	60%	60%	60%	60%	60%	60%
Poor	80%	75%	70%	65%	64%	63%	62%
Abundant	100%	90%	80%	70%	68%	66%	64%
Rich	120%	105%	90%	75%	72%	69%	66%
Very Rich	140%	120%	100%	80%	76%	72%	68%

Source: config/economy.toml [raw_material_efficiency] section

Look up the Raw Material classification of your colony's system in the RAW column, and cross index with the planet's habitable conditions.

Gross House Output (GHO): The sum total of all colony GCO.

Chapter 15. 3.2 Tax Rate

Each turn in the Income Phase you set a House-wide tax rate from 0% to 100%. Your tax rate determines how much of a colony's Gross Colony Output (GCO) is collected as Production Points (PP) for your treasury.

Tax Collection PP Income = Total GCO across all colonies × Tax Rate (rounded up)

Higher tax rates generate more immediate revenue but anger your population. Lower rates slow short-term spending power but accelerate long-term growth and prestige.

15.1. 3.2.1 High-Tax Prestige Penalty (Anti-Cycling Rule)

Every Income Phase the game calculates the **average tax rate over the current turn + the previous five turns** (rolling 6-turn window) and applies the following prestige penalty if the average is above 50 %:

Rolling 6-Turn Average Tax Rate	Prestige Penalty per Turn
≤ 50 %	0
51 – 60 %	-1
61 – 70 %	-2
71 – 80 %	-4
81 – 90 %	-7
91 – 100 %	-11

Source: config/prestige.toml [tax_penalties] section

This penalty is applied every turn the qualifying average is met and cannot be avoided by short-term cycling.

15.2. 3.2.2 Low-Tax Incentives

To reward benevolent or populist rule, colonies grant bonuses in the same Income Phase based on the **tax rate set this turn**:

Tax Rate This Turn	Population Growth Bonus (multiplier to natural 2% base)	Bonus Prestige per Colony This Turn
41 – 50 %	No bonus	–
31 – 40 %	×1.05 (+5 %)	–
21 – 30 %	×1.10 (+10 %)	+1
11 – 20 %	×1.15 (+14 %)	+2

Tax Rate This Turn	Population Growth Bonus (multiplier to natural 2% base)	Bonus Prestige per Colony This Turn
0 – 10 %	×1.20 (+19 %)	+3

Source: config/prestige.toml [tax_incentives] and config/economy.toml [tax_population_growth] sections

With multiple big colonies, low taxes become a legitimate prestige-farming strategy that can outpace military victories in the late game.

Chapter 16. 3.3 Net Colony Value (NCV) and Treasury Management

Net Colony Value (NCV): Represents the net tax revenue collected from each colony.

```
NCV = GCO x tax rate
```

Net House Value (NHV): The sum total of all NCVs across the player’s colonies. NHV is transferred to the House treasury at the beginning of each turn.

Chapter 17. 3.4 Industrial Units and Productivity Growth

Industrial Units (IU) represent manufacturing capacity - factories, shipyards, supply chains, and industrial infrastructure. IU directly boosts GCO through the production formula.

Passive IU Growth:

Colonies naturally develop industrial infrastructure as populations grow and economies mature:

```
IU Growth per Turn = max(1, floor(PU / 200)) x tax multiplier x (1 + starbase bonus)
```

Where:

- Tax multiplier = `(1 - tax_rate)` (e.g., 50% tax → 0.5 multiplier)
- Starbase bonus = 0.05 per operational starbase, max 0.15 (3 starbases)

High taxes throttle industrial development. Low taxes accelerate it. For starbase economic benefits, see Section 2.4.4.

Active IU Investment:

You can accelerate industrial development by spending PP directly:

```
IU purchased = PP spent
```

Each PP you spend converts directly to one IU at your target colony. Investment is immediate and takes effect in the same turn's GCO calculation.

Strategic Considerations:

Young colonies benefit most from IU investment—the multiplier effect on GCO is strongest when baseline production is low. Mature colonies with high PU already generate substantial GCO from population alone; IU investment has diminishing returns but remains useful for maintaining economic growth.

Chapter 18. 3.5 Population Growth

Population naturally increases each turn via birthrate, modified by tax policy and infrastructure:

```
PU Growth per Turn = max(1, floor(PU x 0.02 x tax_multiplier x (1 + starbase_bonus)))
```

Where:

- Base birthrate = 2% per turn
- Tax multiplier from Section 3.2.2
- Starbase bonus = 0.05 per operational starbase, max 0.15 (3 starbases)

Active Population Transfer:

You can move PTU between colonies to accelerate development. Due to the exponential PTU-to-PU relationship, your mature colonies can export large numbers of people while losing minimal PU, and young colonies gain substantial productive capacity from each PTU received.

Transportation:

You transport PTU via two methods:

1. **Environmental Transformation and Colonization ships (ETACs)**: Plant new colonies. See Section 2.3.2.3 for unit specifications.
2. **Space Guild contracts**: Move PTU between established colonies. Guild fees and mechanics are handled through the Income Phase interface.

Chapter 19. 3.6 Fighter Squadron Economics

Fighter Squadron (FS) capacity is determined by colony infrastructure and House technology:

```
Max FS per Colony = max(1, floor(PU / 100)) x FD_MULTIPLIER
```

Where:

- PU / 100: Natural capacity scaling with population
- FD_MULTIPLIER: From Fighter Doctrine (FD) research Section 4.12
- Operational Starbase requirement: 1 Starbase per 5 FS (rounded up)

Construction Cost:

Each Fighter Squadron costs **5 PP** to commission.

Maintenance:

Fighter Squadrons have zero ongoing maintenance cost. Once built, they're free to operate.

Carriers:

Fighter Squadrons can be loaded onto carriers for mobility. Carrier capacity depends on carrier type and Advanced Carrier Operations (ACO) technology. See Section 2.4.1 for carrier loading mechanics and Section 4.13 for ACO research.

Infrastructure Requirement:

Colonies must maintain 1 operational Starbase per 5 FS (rounded up). When Fighter Doctrine research increases capacity, colonies have 2 turns grace period to construct additional Starbases before commissioning new squadrons.

Strategic Considerations:

Fighter Squadrons are cost-effective early-game defenders and remain relevant throughout the campaign. Large mature colonies can field dozens of squadrons, creating formidable defensive positions. However, the Starbase infrastructure requirement constrains total capacity and creates meaningful tradeoffs between defense depth and construction investment.

Chapter 20. 3.7 Facility Construction Economics

Spaceports:

- **Cost**: 20 PP
- **Construction Time**: 1 turn
- **Construction Capacity**: 5 simultaneous docks
- **Planet-side ship construction penalty**: +100% PP cost to launch ships into orbit
- **Cannot repair ships** - construction only

Shipyards:

- **Cost**: 60 PP
- **Construction Time**: 2 turns
- **Prerequisite**: Requires operational Spaceport at colony
- **Construction Capacity**: 10 simultaneous docks
- **Orbital construction**: Standard PP costs, no penalties
- **Ship repairs**: 25% of ship's original PP cost, 1 turn duration
- **Starbase repairs**: 25% of starbase's original PP cost, 1 turn duration

Construction Capacity Scaling:

Both facilities' dock counts scale with Construction (CST) technology level. See Section 4.5 for CST research progression and capacity multipliers.

For detailed facility capabilities and construction rules, see Sections 5.0-5.4.

Chapter 21. 3.8 Research & Development Investment

You allocate PP to three research pools during the Income Phase:

Economic Research Points (ERP): Improves your colony economic output through Economic Level (EL) technology. Each EL tier increases the economic multiplier applied to Industrial Units in the GCO formula.

Social Research Points (SRP): Unlocks critical infrastructure and doctrinal technologies including Fighter Doctrine (FD), Advanced Carrier Operations (ACO), Cloaking (CLK), Electronic Intelligence (ELI), Shields (SLD), Terraforming (TER), and Strategic Lift (STL).

Tactical Research Points (TRP): Advances weapons (WEP) and construction (CST) technologies. WEP improvements increase ship combat effectiveness. CST improvements increase facility construction capacity and unlock advanced hull classes.

Research pools accumulate over multiple turns. Technologies require specific point thresholds and Science Level (SL) prerequisites to unlock. For complete research progression tables and technology effects, see Section 4.0.

Chapter 22. 4.0 Research & Development

R&D investment drives your technological advancement across economic, social, and military domains. You allocate Production Points to three distinct research pools each turn, accumulating progress toward specific technology thresholds.

Chapter 23. 4.1 Science Level (SL)

Science Level represents your House's overall technological sophistication and research infrastructure. SL gates access to advanced technologies—you cannot research a technology whose SL requirement exceeds your current Science Level.

SL Progression:

SL	ERP Required	SRP Required	Total RP Required	Cumulative RP
1	0	0	0	0
2	10	10	20	20
3	12	13	25	45
4	15	16	31	76
5	19	21	40	116
6	24	27	51	167
7	31	35	66	233
8	40	46	86	319
9	52	60	112	431
10	68	78	146	577

SL advances automatically when your House accumulates the required ERP and SRP thresholds. Both pools must meet their respective requirements simultaneously.

Strategic Implications:

SL advancement is non-linear and becomes progressively more expensive. Early SL tiers unlock rapidly with modest investment, but reaching SL 10 requires sustained R&D commitment over many turns. Houses that neglect research find themselves technologically outpaced and unable to field advanced unit types or economic multipliers.

Chapter 24. 4.2 Economic Level (EL)

Economic Level multiplies Industrial Unit output in the GCO formula, representing advances in manufacturing efficiency, automation, and industrial organization.

Research Progression:

Tech Level	Prerequisites	ERP Cost	SL Required	Economic Multiplier
EL I	None	N/A	1	1.0x
EL II	EL I	10	2	1.5x
EL III	EL II	12	3	2.0x
EL IV	EL III	15	4	2.5x
EL V	EL IV	19	5	3.0x
EL VI	EL V	24	6	3.5x
EL VII	EL VI	31	7	4.0x
EL VIII	EL VII	40	8	4.5x
EL IX	EL VIII	52	9	5.0x
EL X	EL IX	68	10	5.5x

Application:

EL multiplier applies to the IU component of GCO:

```
IU Output = IU x EL_MOD x CST_MOD x (1 + PROD_GROWTH + STARBASE_BONUS)
```

EL upgrades affect all colonies simultaneously. A House at EL V with 100 IU at each of three colonies generates triple the industrial output compared to EL I.

Strategic Considerations:

EL research provides exponential returns when combined with high IU counts. If you pursue industrial strategies, prioritize EL advancement alongside IU investment. However, EL is useless without IU to multiply—young colonies benefit more from direct IU spending than EL research.

Chapter 25. 4.3 Weapons Technology (WEP)

Weapons technology improves ship combat statistics across all hull classes. Each WEP tier increases Attack Strength (AS), Defense Strength (DS), and modifies ship costs.

Research Progression:

Tech Level	Prerequisites	TRP Cost	SL Required
WEP I	None	N/A	1
WEP II	WEP I	10	2
WEP III	WEP II	12	3
WEP IV	WEP III	15	4
WEP V	WEP IV	19	5
WEP VI	WEP V	24	6
WEP VII	WEP VI	31	7
WEP VIII	WEP VII	40	8
WEP IX	WEP VIII	52	9
WEP X	WEP IX	68	10

Application:

WEP affects all newly constructed ships and retrofitting existing ships:

New Construction:

- Ships are built with current House WEP level
- AS/DS values use WEP-modified statistics
- Construction costs reflect current WEP tier

Retrofitting Existing Ships:

- Costs 50% of the ship's current WEP-tier construction cost
- Requires 1 turn at a Shipyard
- Ship is unavailable during retrofit (cannot move or fight)
- After retrofit, ship uses new WEP tier statistics

For complete ship statistics by WEP level, see Section 10.0.

Strategic Considerations:

WEP research is essential for maintaining military competitiveness. Houses that fall behind in WEP face catastrophic combat disadvantages—a WEP III fleet cannot trade effectively against WEP V opponents. However, retrofitting large fleets is expensive and time-consuming, creating windows of vulnerability during technological transitions.

Chapter 26. 4.4 Shields (SLD)

Shield technology protects colonies from orbital bombardment, absorbing incoming fire before ground installations take damage.

Research Progression:

Tech Level	Prerequisites	SRP Cost	SL Required	Absorption %	Shield DS
SLD I	None	10	2	15%	10
SLD II	SLD I	13	3	25%	20
SLD III	SLD II	16	4	35%	30
SLD IV	SLD III	21	5	45%	40
SLD V	SLD IV	27	6	55%	50
SLD VI	SLD V	35	7	65%	60

Source: config/tech.toml [shields] section

Planetary Shield Construction:

After researching an SLD tier, Houses can construct Planetary Shields at any colony:

- **Construction Cost**: Varies by SLD level (see Section 10.0)
- **Construction Time**: 1 turn
- **Limit**: One shield per colony
- **Upgrading**: Requires salvaging old shield (50% refund) and building new shield

Bombardment Mechanics:

During orbital bombardment, each incoming hit from the attacking fleet has a probability equal to the Absorption % of being completely absorbed by the shield. Absorbed hits deal zero damage to ground installations. Hits that penetrate the shield damage ground batteries normally.

The shield itself has DS that must be overcome before it can be destroyed. Once destroyed, subsequent bombardment rounds bypass shields entirely until a new shield is constructed.

For complete bombardment rules, see Section 7.5.

Strategic Considerations:

High-tier shields make your colonies nearly impervious to bombardment, forcing attackers to commit overwhelming fleets or conduct protracted sieges. However, shields are expensive to upgrade and provide no benefit against ground invasion—Marines bypass shields entirely. Late-game Planet-Breaker weapons completely ignore shields, making SLD VI potentially obsolete against advanced adversaries.

Chapter 27. 4.5 Construction (CST)

Construction technology increases shipyard and spaceport capacity, enables advanced hull classes, and improves industrial efficiency.

Research Progression:

Tech Level	Prerequisites	TRP Cost	SL Required	Capacity Multiplier	Unlocked Hulls
CST I	None	N/A	1	1.0x	DD, CL, CA, CV
CST II	CST I	10	2	1.1x	BC
CST III	CST II	12	3	1.2x	-
CST IV	CST III	15	4	1.3x	BB, CX
CST V	CST IV	19	5	1.4x	-
CST VI	CST V	24	6	1.5x	DN
CST VII	CST VI	31	7	1.6x	-
CST VIII	CST VII	40	8	1.7x	SD
CST IX	CST VIII	52	9	1.8x	-
CST X	CST IX	68	10	1.9x	PB

Source: config/tech.toml [construction] section

Facility Capacity:

CST technology increases construction throughput at shipyards and spaceports:

Spaceport Docks:

```
Dock Count = 5 × CST_MULTIPLIER (rounded down)
```

Shipyard Docks:

```
Dock Count = 10 × CST_MULTIPLIER (rounded down)
```

Example: At CST VI (1.5x multiplier):

- Spaceports: 5 × 1.5 = 7 docks
- Shipyards: 10 × 1.5 = 15 docks

Hull Class Unlocks:

Certain ship classes require minimum CST levels to construct:

- **CST I**: Destroyers (DD), Light Cruisers (CL), Heavy Cruisers (CA), Standard Carriers (CV)
- **CST II**: Battlecruisers (BC)
- **CST IV**: Battleships (BB), Super Carriers (CX)
- **CST VI**: Dreadnoughts (DN)
- **CST VIII**: Super-Dreadnoughts (SD)
- **CST X**: Planet-Breakers (PB)

For complete hull specifications, see Section 10.1.

GCO Modifier:

CST technology also applies a modifier to Industrial Unit output in the GCO formula:

```
CST_MOD = 1.0 + (CST_level - 1) x 0.10
```

Example: CST VI → CST_MOD = 1.0 + (6-1) × 0.10 = 1.5

Strategic Considerations:

CST is essential for both military and economic expansion. If you pursue capital ship strategies, invest heavily in CST to unlock dreadnoughts and super-dreadnoughts. The capacity multiplier allows your mature colonies to maintain larger construction queues, enabling rapid fleet replacement during prolonged conflicts. The GCO modifier makes CST economically valuable even for defensive-focused Houses.

Chapter 28. 4.6 Terraforming (TER)

Terraforming technology allows colonies to upgrade their planet class, increasing maximum Population Unit (PU) capacity and improving economic output.

Research Progression:

Tech Level	Prerequisites	SRP Cost	SL Required	Terraform Cost	Upgrade Path
TER I	None	16	4	100 PP	Extreme → Desolate
TER II	TER I	21	5	150 PP	Desolate → Hostile
TER III	TER II	27	6	200 PP	Hostile → Harsh
TER IV	TER III	35	7	250 PP	Harsh → Benign
TER V	TER IV	46	8	300 PP	Benign → Lush
TER VI	TER V	60	9	350 PP	Lush → Eden

Terraforming Process:

1. Research the TER tier corresponding to desired upgrade
2. Spend required PP at target colony during Income Phase
3. Planet class upgrades immediately
4. Maximum PU capacity increases per new planet class (see Section 2.2)
5. RAW_INDEX efficiency improves if applicable

Limits:

Planets cannot skip classes. A Hostile world must upgrade to Harsh before reaching Benign. Each upgrade requires separate research and payment.

Strategic Considerations:

Terraforming converts marginal colonies into economic powerhouses. A fully terraformed Eden world can support 2,000+ PU, generating enormous GCO even with modest IU investment. However, terraforming is expensive and slow—the SRP cost progression means reaching TER VI requires sustained research investment throughout the mid-to-late game. If you pursue terraforming strategies, balance opportunity cost against immediate military needs.

Chapter 29. 4.7 Cloaking (CLK)

Cloaking technology enables covert operations through Raiders - specialized ships that conduct espionage and disruptive attacks behind enemy lines.

Research Progression:

Tech Level	Prerequisites	SRP Cost	SL Required	Detection Resistance
CLK I	None	10	2	Moderate
CLK II	CLK I	13	3	Good
CLK III	CLK II	16	4	Excellent
CLK IV	CLK III	21	5	Superior
CLK V	CLK IV	27	6	Elite

Raider Capabilities:

Raiders are specialized covert vessels that conduct intelligence gathering, sabotage, and assassination missions. Each CLK tier improves Raider stealth, making them harder to detect.

Detection Mechanics:

Enemy colonies equipped with Electronic Intelligence (ELI) technology can detect Raiders. Detection rolls compare the Raider's CLK level against the defender's ELI level using the Raider Detection Table in Section 2.4.3.

Higher CLK tiers significantly reduce detection probability, enabling Raiders to operate deep in enemy territory with relative impunity.

Strategic Applications:

- **Intelligence**: Reveal enemy fleet compositions and colony defenses
- **Sabotage**: Destroy Industrial Units, damage infrastructure
- **Assassination**: Eliminate enemy commanders (advanced missions)
- **Blockade Running**: Covert supply runs to besieged colonies

For complete Raider specifications and mission types, see Sections 2.4.3 and Section 9.0.

Strategic Considerations:

CLK investment creates information asymmetry—Houses with advanced Raiders can scout enemy positions while remaining undetected. However, Raiders are fragile and expensive, and aggressive ELI investment by adversaries can neutralize CLK advantages. The CLK vs. ELI arms race becomes critical in late-game peer conflicts.

Chapter 30. 4.8 Electronic Intelligence (ELI)

Electronic Intelligence represents sensor technology, signals analysis, and detection networks. ELI enables colonies to detect enemy Scouts and Raiders conducting covert operations.

Research Progression:

Tech Level	Prerequisites	SRP Cost	SL Required	Detection Capability
ELI I	None	10	2	Basic
ELI II	ELI I	13	3	Improved
ELI III	ELI II	16	4	Advanced
ELI IV	ELI III	21	5	Superior
ELI V	ELI IV	27	6	Elite

Detection Mechanics:

ELI determines a colony's ability to detect enemy Scouts and Raiders:

Scout Detection: Uses the Scout Detection Table in Section 2.4.2. Detection probability increases with ELI tier and multiple Scout presence (mesh network effect).

Raider Detection: Uses the Raider Detection Table in Section 2.4.3. Higher ELI levels significantly increase detection probability against cloaked Raiders.

Starbase Synergy: Starbases provide a +2 ELI modifier for detection rolls, making them critical for defending high-value colonies against covert operations. See Section 2.4.4.

Strategic Considerations:

ELI provides critical combat benefits by detecting cloaked Raiders and preventing their devastating +4 CER ambush bonus. Your ELI-equipped scouts share detection across your entire task force, negating enemy stealth advantages in both space and orbital combat. However, ELI provides no direct firepower or economic benefit—you must balance ELI investment against other research priorities.

Failing to invest in ELI allows adversaries to operate Raiders with impunity against your forces. Undetected Raiders strike first, potentially crippling your fleet before your capital ships can respond. ELI is defensive technology with offensive implications—Houses without adequate ELI face catastrophic combat disadvantages against cloaked adversaries.

ELI is also essential for planetary defense. Your colonies with high ELI and Starbases (+2 ELI modifier) can detect covert Scout and Raider operations, protecting your industrial capacity from sabotage missions. ELI is a meta-game technology—its value depends entirely on opponent strategies and the prevalence of stealth warfare in your campaign.

Chapter 31. 4.9 Strategic Lift (STL)

Strategic Lift improves Environmental Transformation and Colonization (ETAC) ships and Troop Transports, increasing their carry capacity for colonists and Marines.

Research Progression:

Tech Level	Prerequisites	SRP Cost	SL Required	ETAC Capacity	Transport Capacity
STL I	None	N/A	1	1 PTU	1 MD
STL II	STL I	10	2	2 PTU	2 MD
STL III	STL II	13	3	3 PTU	3 MD
STL IV	STL III	16	4	4 PTU	4 MD
STL V	STL IV	21	5	5 PTU	5 MD

Application:

STL upgrades apply immediately to all existing ETACs and Troop Transports upon research completion. Ships in transit or loading can immediately increase their cargo capacity up to the new limit.

ETAC Implications:

Higher STL tiers allow new colonies to start with larger populations, accelerating early development. A single ETAC at STL V establishes colonies with 5 PTU instead of 1 PTU, providing immediate productive capacity and reducing the need for follow-up colonist transfers.

Troop Transport Implications:

STL improvements enable larger invasion forces. A Transport at STL V carries 5 Marine Divisions instead of 1, allowing Houses to conduct overwhelming ground assaults with fewer ships and reducing the number of jumps required to position invasion forces.

Strategic Considerations:

STL is an economic multiplier for expansion-focused strategies. If you pursue aggressive colonization, early STL investment benefits you enormously, while defensive Houses can delay STL research indefinitely. However, STL becomes critical during peer conflicts—Houses that neglect STL face logistical disadvantages when reinforcing distant colonies or conducting invasions across extended jump lane networks.

Chapter 32. 4.10 Command (CMD)

Command technology increases the Command Rating (CR) of capital ship flagships, allowing them to lead larger squadrons.

Research Progression:

Tech Level	Prerequisites	TRP Cost	SL Required	CR Increase
CMD I	None	N/A	1	Base CR
CMD II	CMD I	10	2	+1 CR
CMD III	CMD II	12	3	+2 CR
CMD IV	CMD III	15	4	+3 CR
CMD V	CMD IV	19	5	+4 CR

Application:

CMD bonuses apply to the base Command Rating of capital ship flagships:

```
Effective CR = Base CR + CMD Bonus
```

Example: A Battleship (BB) has Base CR 9. At CMD III, Effective CR = 9 + 2 = 11.

Higher CR allows flagships to command more ships within their squadron, as each ship consumes Command Cost (CC) based on its class. For squadron composition rules and CC values, see Section 2.3.3.

Retrofitting:

Unlike WEP technology, CMD bonuses apply automatically to existing flagships without requiring retrofits. The moment CMD research completes, all capital ships in the House fleet can immediately reorganize squadrons to take advantage of increased CR.

Strategic Considerations:

CMD research enables squadron consolidation, reducing administrative overhead and improving tactical flexibility. At CMD V, you can field fewer, larger squadrons instead of many small squadrons, simplifying fleet management during complex operations. However, larger squadrons become more vulnerable to focused fire—losing a high-CR flagship potentially scatters many ships, creating organizational chaos.

Chapter 33. 4.11 Capital Ship Capacity

Capital squadron capacity represents a House's ability to maintain large warships through industrial infrastructure:

```
Max Capital Squadrons = max(8, floor(Total_House_IU ÷ 100) x 2)
```

Capital ships are defined as vessels with Command Rating (CR) ≥ 7:

- Battlecruisers (BC)
- Battleships (BB)
- Dreadnoughts (DN)
- Super-Dreadnoughts (SD)
- Standard Carriers (CV)
- Super Carriers (CX)

Capacity Enforcement:

When a House exceeds capital squadron capacity (typically from IU loss due to bombardment, blockades, or territory loss), excess squadrons are immediately claimed by Space Guilds for salvage. Priority for removal:

1. Crippled flagships first
2. Lowest Attack Strength (AS) among non-crippled flagships

The House receives 50% of each ship's original build cost as salvage payment.

Strategic Implications:

Your industrial capacity directly determines fleet size. If you pursue capital ship strategies, invest heavily in IU development and protect your industrial colonies from bombardment. Losing a major industrial world can force immediate fleet reductions, potentially at the worst possible moment.

For complete salvage mechanics, see Section 2.5.1.

Chapter 34. 4.12 Fighter Doctrine (FD)

Fighter Doctrine improves organizational efficiency and training throughput, increasing the number of Fighter Squadrons (FS) each colony can support.

Research Progression:

Tech Level	Prerequisites	TRP Cost	SL Required	Capacity Multiplier
FD I	None	N/A	1	1.0x
FD II	FD I	15	2	1.5x
FD III	FD II	17	3	2.0x

FD I - Basic Fighter Operations

Standard fighter squadron operations with conventional command structures. Base capacity determined by population and infrastructure.

FD II - Advanced Fighter Operations

Enhanced pilot academies, improved communication networks, and advanced squadron coordination protocols. Increases operational capacity by 50% through better resource utilization and training throughput.

FD III - Elite Fighter Operations

Elite pilot training programs, AI-assisted tactical coordination, and distributed command networks. Doubles fighter squadron capacity through revolutionary organizational efficiency and automated logistics systems.

Application:

Fighter Doctrine upgrades apply house-wide immediately upon research completion. All colonies recalculate their maximum fighter squadron capacity using the new multiplier:

```
Max FS per Colony = max(1, floor(PU / 100)) x FD_MULTIPLIER
```

Colonies must maintain the required Starbase infrastructure (1 operational Starbase per 5 FS) regardless of doctrine level. The Starbase requirement does not scale with FD tech.

When FD tech increases capacity, existing fighter squadrons remain operational and colonies can immediately commission additional squadrons up to their new capacity limit (subject to infrastructure requirements and available production points).

If capacity increases would require additional Starbases, colonies have 2 turns to construct the required infrastructure before commissioning new squadrons. Existing squadrons are grandfathered and remain operational during the grace period.

For fighter squadron economics, see Section 3.6. For combat mechanics, see Section 2.4.1.

Chapter 35. 4.13 Advanced Carrier Operations (ACO)

Advanced Carrier Operations improves carrier efficiency, allowing greater fighter squadron capacity per vessel through enhanced hangar systems, rapid deployment mechanisms, and improved logistics.

Research Progression:

Tech Level	Prerequisites	TRP Cost	SL Required	CV Capacity	CX Capacity
ACO I	None	N/A	1	3 FS	5 FS
ACO II	ACO I	20	4	4 FS	6 FS
ACO III	ACO II	22	5	5 FS	8 FS

ACO I - Standard Carrier Operations

Base carrier capacity with conventional hangar layouts and deployment systems. Standard Carriers (CV) accommodate 3 fighter squadrons; Super Carriers (CX) carry 5.

ACO II - Enhanced Carrier Operations

Improved hangar bay design, automated fighter launch systems, and enhanced maintenance facilities increase carrier capacity by 33%. Standard Carriers (CV) can accommodate 4 fighter squadrons; Super Carriers (CX) can carry 6.

ACO III - Advanced Carrier Operations

Revolutionary multi-deck hangar systems, AI-coordinated rapid deployment, and advanced repair facilities maximize carrier efficiency. Standard Carriers (CV) accommodate 5 fighter squadrons; Super Carriers (CX) carry 8.

Application:

ACO upgrades apply immediately to all carriers in the House fleet upon research completion. Existing carriers can load additional fighters up to their new capacity limit at any friendly colony during the loading phase.

Carriers in transit or in combat zones must return to a friendly colony to take advantage of increased capacity.

ACO technology affects carrier capacity only and does not modify fighter squadron statistics, maintenance costs, or combat effectiveness.

For carrier combat mechanics, see Section 2.4.1.

Chapter 36. 4.14 Strategic Considerations

- **Balancing R&D Investments**: You must balance investments across ERP, SRP, and TRP to maximize your economic output, technological advancements, and military strength.
- **Economic Synergies**: Increasing EL and SL together provides synergistic benefits, enhancing your overall productivity and unlocking powerful technologies.
- **Adapting to Opponents**: Flexibility in R&D strategy is key. Prioritize weapons technology (WEP) during military conflicts or focus on terraforming (TER) for long-term economic growth—critical decisions based on the game state.

Chapter 37. 5.0 Construction

You accomplish construction and repair of House assets planet-side or in orbit, with restrictions.

Chapter 38. 5.1 Ship Construction

All ship construction completes instantly (1 turn) regardless of hull class or CST tech level. This reflects the game's time narrative where turns represent variable time periods (1-15 years depending on map size).

Payment Model:

- You must pay full PC cost **upfront** from your house treasury when construction begins
- You cannot start construction if your house lacks sufficient PP in treasury
- If you cancel construction, you receive a 50% PC refund to treasury

Construction Vulnerability:

Ships under construction in docks can be destroyed during the Conflict Phase if:

- The shipyard/spaceport is destroyed by orbital bombardment
- The facility is crippled by combat damage

Destroyed ships-in-construction provide no salvage value. Your house loses the full PC investment.

Completion and Commissioning:

Ship building completes at the start of the Command Phase and are immediately commissioned:

- Ship is created with current house tech levels
- Automatically assigned to existing squadron at facility location (if capacity available)
- Otherwise, new squadron is created with ship as flagship
- If no fleet exists at location, new fleet is created

Construction Locations:

Ships can be constructed at two facility types with different costs and requirements. See Sections 5.2-5.5 for detailed construction rules by facility type.

Chapter 39. 5.2 Planet-side Construction

Ground units and fighter squadrons are produced via colony industry, distributed across the surface or in underground factories.

Spaceports:

Ships (excluding fighter squadrons) constructed planet-side incur a **100% PC increase** due to the added cost of orbital launch, and require a spaceport to commission.

Example Cost Calculation:

Base ship cost: 50 PP Planet-side construction: 50 PP × 2 = 100 PP total

For spaceport specifications and capacity, see Section 2.3.2.1.

Chapter 40. 5.3 Planet-side Repair

Ground units and fighter squadrons are repaired and refitted planet-side using colony industrial capacity.

Spaceports cannot repair ships. Spaceports are construction facilities only - they launch ships into orbit but cannot repair orbital damage.

Chapter 41. 5.4 Orbital Construction

Shipyard construction of a ship in orbit is the standard method of commissioning a vessel, and incurs no penalty.

Standard Costs:

Ships built at shipyards use their base PP cost with no modifiers. This is the economically efficient construction method.

For shipyard specifications and capacity, see Section 2.3.2.2.

Chapter 42. 5.5 Orbital Repair

Ship repairs require a Shipyard. Spaceports cannot repair ships - only shipyards have the orbital infrastructure for ship repairs.

Ship Repairs:

The number of turns required to repair a crippled ship is one turn. The ship's squadron must be located at a colony equipped with a shipyard, and the ship remains decommissioned through the repair period.

The cost of repair equals one quarter (25%) of the ship's construction PP. All ship repairs complete in 1 turn regardless of ship class.

Example: You wish to repair a crippled WEP3 Light Cruiser. The cost is:

```
72.6 PP (build cost) * 0.25 = 18.15 PP (repair cost)
```

Starbase Repairs:

Starbase repairs also require shipyards and cost 25% of the starbase's construction PP. Repair time is 1 turn.

Colonies without shipyards cannot repair crippled ships. Ships must either:

- Transfer to a colony with shipyard capacity, or
- Be salvaged for 50% PC recovery

Chapter 43. 6.0 Fleet Operations and Movement

Command your fleets across the stars. Direct them with explicit orders for immediate missions or standing orders for persistent behaviors. Your strategic decisions at the fleet level drive military success—squadrons handle the tactical execution.

This section covers jump lane travel, ship commissioning pipelines, fleet orders, standing orders, and repair operations. Master these systems to project power effectively across your empire.

Chapter 44. 6.1 Jump Lanes

Your fleets travel between star systems via **jump lanes**—pre-calculated routes through hyperspace connecting adjacent systems. Jump lanes define your strategic map: systems without lanes remain unreachable, while densely connected systems become strategic crossroads.

For complete details on jump lane classes, distribution, and the starmap structure, see Section 2.1 Star Map.

44.1. 6.1.2 Jump Lane Movement Rules

Movement capacity depends on lane control and lane class:

- **Controlled major lanes**: If you own all systems along the travel path, your fleets can jump two major lanes in one turn
- **Minor and restricted lanes**: Enable a single jump per turn, regardless of the destination
- **Unexplored or rival systems**: Limit movement to one jump maximum
- **Lane restrictions**: Fleets containing crippled ships or Spacelift Command ships cannot traverse restricted lanes

44.2. 6.1.3 Strategic Implications

Chokepoints control empires: Systems with few connecting lanes become natural defensive positions. Control the chokepoint and you control the region.

Connectivity determines value: Well-connected systems with major lanes serve as staging areas and logistics hubs. Isolated systems connected only by restricted lanes require specialized defense forces without ETACs or damaged ships.

Patrol routes follow lanes: Standing patrol orders automatically follow jump lane networks. Your fleets defend multiple systems using established lanes.

Lane class matters for expansion: Restricted lanes prevent ETAC passage, creating natural expansion barriers. Plan colonization routes around major and minor lanes for reliable access.

Chapter 45. 6.2 Ship Commissioning and Fleet Organization

Your industrial might produces warships and spacelift vessels. Ships move from treasury expenditure through construction yards to commissioned squadrons and finally into operational fleets. This four-stage pipeline transforms economic investment into military power.

45.1. 6.2.1 The Commissioning Pipeline

Stage One: Build Orders

Allocate treasury (production points) to construction projects at your colonies. Each project requires available dock capacity at either spaceports or shipyards:

Spaceports (Planet-side Construction): - Built in 1 turn, provides 5 construction docks - Can build any ship type - **100% commission penalty**: Ships (except fighters) cost double production points due to orbital launch costs - Fighter squadrons exempt from penalty (distributed planetary manufacturing) - Required prerequisite for building shipyards

Shipyards (Orbital Construction): - Built in 2 turns, requires existing spaceport, provides 10 construction docks - Can build any ship type at standard cost (no penalty) - **ONLY facility that can repair ships** - spaceports cannot repair - Repairs any ship class at 25% of build cost (1 turn) - Also repairs starbases - Economically superior for all non-fighter construction

Ship Repair Requirements: - **All ship repairs require shipyards** - spaceports cannot repair ships - Repair cost: 25% of build cost - Repair time: 1 turn for all ship classes - Starbase repairs also require shipyards - Colonies without shipyards cannot repair crippled ships (must salvage or transfer to shipyard colony)

Build Order Mechanics: - **Upfront payment**: Full construction cost (including spaceport penalties) deducted immediately from treasury - **Construction time**: 1+ turns based on ship class and technology level - **Simultaneous projects**: Limited only by available dock capacity across all facilities

Strategic Priority: Build shipyards early at all major colonies. The 100% spaceport penalty makes planet-side construction economically devastating for anything except fighters. Plan ahead—commit resources turn X, receive operational ships turn X+N.

Stage Two: Construction Completion

When construction completes, your ships **immediately commission** into squadrons: - **Capital ships** (BB, DN, SD, CA, CL) create new squadrons as flagships - **Escorts** (DD, FF, CT) join existing unassigned capital squadrons based on command capacity - **Scouts and fighters** form single-ship squadrons for specialized missions - **Spacelift ships** enter the unassigned pool, ready for colonization or transport missions

No intermediate "ready to commission" state—your ships transition directly from construction to operational status, just like vessels completing sea trials immediately join the active fleet.

Stage Three: Fleet Assignment

Squadrons automatically join fleets at their construction colony, eliminating tactical micromanagement while keeping your forces operationally ready. Your newly-commissioned squadrons organize into existing stationary fleets or form new fleets automatically.

Stationary fleets receive reinforcements: - Fleets with **Hold, Guard, or Patrol** orders (at same system) - Fleets with **defensive standing orders** (DefendSystem, GuardColony, AutoEvade) - Fleets with **no orders** (default stationary posture)

Moving fleets do not receive reinforcements: - Fleets executing **movement orders** or on patrol routes - Fleets with **movement-based standing orders** (PatrolRoute, AutoColonize, AutoRepair) - **Reserve or Mothballed** fleets (intentional reduced-readiness status)

This system ensures squadrons join fleets **intentionally stationary** at your colony, not temporarily passing through. Your fleets maintain operational readiness without interrupting ongoing missions.

Why automatic assignment? Squadrons are **tactical assets for combat**, not strategic decision points. You command at the fleet level—issuing orders, setting patrol routes, managing fleet composition. Automatic assignment eliminates the micromanagement trap of forgetting to deploy newly-built units while preserving your strategic control through fleet orders and standing orders.

Stage Four: Fleet Operations

Once in fleets, control your forces through **fleet orders** (one-time missions) and **standing orders** (persistent behaviors). Transfer squadrons between fleets, adjust compositions, or place fleets in Reserve/Mothballed status to control operational costs.

45.2. 6.2.2 Squadron Formation Rules

Your ships organize into squadrons based on command structure:

Capital ships become flagships: Battleships, Dreadnoughts, Super Dreadnoughts, Heavy Cruisers, and Light Cruisers create new squadrons. Each capital ship commands its own squadron.

Escorts serve as wingmen: Destroyers, Frigates, and Corvettes join capital squadrons based on the flagship's command capacity. A Battleship commands more escorts than a Light Cruiser.

Scouts operate independently: Scout ships form single-ship squadrons for reconnaissance missions, intelligence gathering, and espionage operations.

Fighters defend colonies: Fighter squadrons remain assigned to colonies for orbital defense, separate from fleet operations.

45.3. 6.2.3 Fleet Composition Strategy

Design your fleets for their mission profile:

Battle fleets combine capital ships with escort screens. Your Dreadnoughts and Battleships provide firepower; Destroyers and Frigates screen against threats.

Patrol fleets use Light Cruisers with Destroyer escorts for patrol routes and border security. Balance firepower with operational cost.

Scout fleets deploy single-scout squadrons for intelligence gathering, system reconnaissance, and espionage missions. Small footprint, high stealth.

Reserve fleets store mothballed squadrons at major colonies for emergency mobilization. Zero maintenance cost, immediate reactivation when needed.

Chapter 46. 6.3 Fleet Orders

Command your fleets with 20 distinct mission types—from peaceful exploration to devastating orbital bombardment. Issue orders once; your fleets execute them persistently across turns until mission completion or your new orders override them.

46.1. 6.3.1 Active Fleet Orders

Explicit orders that execute until completed or overridden:

No.	Mission	Requirements
00	None (hold position)	None
01	Move Fleet (only)	None
02	Seek home	None
03	Patrol a System	None
04	Guard a Starbase	Combat ship(s)
05	Guard/Blockade a Planet	Combat ship(s)
06	Bombard a Planet	Combat ship(s)
07	Invade a Planet	Combat ship(s) & loaded Troop Transports
08	Blitz a Planet	Loaded Troop Transports
09	Spy on a Planet	Scout-only fleet (1+ scout squadrons)
10	Hack a Starbase	Scout-only fleet (1+ scout squadrons)
11	Spy on a System	Scout-only fleet (1+ scout squadrons)
12	Colonize a Planet	One ETAC
13	Join another Fleet	None
14	Rendezvous at System	None
15	Salvage	Friendly Colony System
16	Place on Reserve	At friendly colony
17	Mothball Fleet	At friendly colony with Spaceport
18	Reactivate Fleet	Reserve or Mothballed fleet
19	View a World	Any ship type

46.2. 6.3.2 Hold Position (00)

Command your fleet to hold position and await new orders. Your fleet maintains station at its current location, providing defensive presence or staging position for future operations.

Use Hold to: - Establish defensive positions at strategic locations - Stage fleets for coordinated offensives - Maintain presence without specific mission parameters

46.3. 6.3.3 Move Fleet (01)

Move your fleet to a new solar system and hold position. Your fleet travels to the destination system, establishes presence, then awaits further orders. Use Move for strategic repositioning without immediate combat intent.

Use Move to: - Reposition forces to emerging threat sectors - Establish presence at newly-colonized systems - Concentrate forces before major offensives

46.4. 6.3.4 Seek Home (02)

Order your fleet to return to the nearest friendly colony with repair facilities. Your damaged forces automatically navigate to safe harbor for repairs and resupply.

Use Seek Home to: - Evacuate damaged fleets from combat zones - Return forces for strategic redeployment - Consolidate scattered forces at major bases

46.5. 6.3.5 Patrol a System (03)

Command your fleet to patrol a single solar system, maintaining defensive presence and engaging hostiles per your Rules of Engagement settings.

Use Patrol Single System to: - Defend border systems from incursions - Maintain presence in contested regions - Screen friendly colonies from raiders

46.6. 6.3.6 Guard Starbase (04)

Station your fleet at an orbiting starbase for defensive operations. Your fleet protects the starbase from attack, screens it during combat, and intercepts hostile forces.

Use Guard Starbase to: - Protect critical infrastructure investments - Create fortified defensive positions - Support starbase fire during orbital combat

46.7. 6.3.7 Guard/Blockade Planet (05)

Deploy your fleet for planetary operations—either defending friendly colonies or blockading enemy planets. Your fleet maintains low orbit, participating in orbital combat or economic warfare.

Use Guard/Blockade to: - Defend high-value colonies from bombardment - Establish orbital

blockades cutting enemy production - Support ground forces during invasion attempts

46.8. 6.3.8 Bombard Planet (06)

Order devastating orbital bombardment of enemy colonies. Your fleet systematically destroys infrastructure, reducing the colony's industrial capacity and effectiveness.

Destruction Effects: - Infrastructure damage accumulates per turn - Reduces production capacity - Can destroy facilities (spaceports, shipyards) - May cause population casualties

Use Bombardment to: - Prepare targets for invasion - Destroy enemy production capacity - Punish enemy aggression - **WARNING**: Bombardment generates massive diplomatic penalties

46.9. 6.3.9 Invade Planet (07)

Launch ground invasion of enemy colonies. Your fleet deploys marines and army units to seize control, conducting ground combat against defending forces.

Requirements: - Fleet must contain spacelift ships with embarked ground forces - Target colony must have reduced defenses (planetary shields destroyed, garrison weakened)

Combat Resolution: - Ground forces fight defending armies - Orbital support from your fleet - Infrastructure damage during combat - Successful invasion transfers colony ownership

Use Invasion to: - Conquer enemy systems - Capture strategic colonies intact - Expand your empire through force

46.10. 6.3.10 Blitz Planet (08)

Execute rapid planetary assault combining orbital bombardment with immediate ground invasion. Your forces strike simultaneously, overwhelming defenders before they can coordinate defense.

Requirements: - Loaded troop transports - Sufficient orbital superiority

Use Blitz to: - Capture lightly-defended colonies rapidly - Exploit tactical windows before reinforcements arrive - Reduce siege time for strategic operations

46.11. 6.3.11 Spy on Planet (09)

Deploy intelligence operatives to gather colony-level intelligence. Your scout ships conduct covert reconnaissance, gathering data on infrastructure, defenses, and economic output.

Requirements: - Fleet must contain **only Scout squadrons** (no combat ships or spacelift) - One or more scout squadrons allowed (multi-scout deployments supported) - Spy scouts are consumed permanently when deployed (cannot be recovered)

Mesh Network Bonuses:

Multiple scouts working together gain enhanced Electronic Intelligence (ELI) bonuses: - **2-3 scouts:**

1 ELI bonus to detection and stealth - *4-5 scouts:* +2 ELI bonus - *6 scouts:* +3 ELI bonus (maximum)

Deploy larger scout formations for improved survival rates and better intelligence penetration. Scout mesh networks can be created by deploying multiple scouts together or by merging spy scout fleets using Order 13 (Join Fleet) or Order 14 (Rendezvous).

Spy Scout Travel Mechanics:

Spy scouts travel through jump lanes following normal movement rules (Section 6.1.2): - **Controlled Major Lanes:** 2 jumps per turn when spy owner controls all systems along the major lane path - **Minor/Restricted Lanes or Rival Territory:** 1 jump per turn - **Detection Checks:** Detection rolls occur at each intermediate system during travel - **Ally Detection:** If detected by allied forces during transit, scouts are not destroyed (allies share intelligence) - **Enemy Detection:** If detected by hostile/neutral forces, spy scouts are destroyed immediately

Spy-vs-Spy Encounters:

When spy scouts from different houses operate in the same system:

Allied Scouts: - **No detection combat** - allies share intelligence but don't engage - Both houses receive intel reports about the encounter - Promotes intelligence coordination among allied houses

Hostile/Neutral Scouts: - Each spy scout makes independent detection rolls against rival scouts - Detection uses standard ELI detection tables (see assets.md Section 2.4.2) - **Mutual Detection:** Both scouts detect each other → both destroyed, both houses get intel reports - **One-Sided Detection:** Only one scout detects the other → one survives, one destroyed, detector gets intel report - **Stealth Stalemate:** Neither detects the other → both continue missions, no intel reports generated - Detection (when it occurs) triggers **Hostile** diplomatic escalation

Intelligence Gathered: - Colony infrastructure level - Industrial capacity - Military facilities (spaceports, shipyards) - Defensive installations (shields, batteries) - Economic output

Use Spy on Planet to: - Assess target defenses before invasion - Track enemy economic development - Identify strategic targets for strikes

46.12. 6.3.12 Hack Starbase (10)

Conduct cyber warfare operations against enemy starbases. Your intelligence units penetrate starbase networks, extracting economic data, research information, and operational intelligence.

Requirements: - Fleet must contain **only Scout squadrons** (no combat ships or spacelift) - One or more scout squadrons allowed (multi-scout deployments supported) - Target system must have enemy starbase - Spy scouts are consumed permanently when deployed (cannot be recovered)

Spy Scout Travel & Mesh Bonuses: See Order 09 (Spy on Planet) for travel mechanics, detection rules, and mesh network bonuses

Intelligence Gathered: - Research progress - Economic production data - Fleet movements - Strategic plans

Use Hack Starbase to: - Steal research advances - Identify enemy fleet deployments - Discover enemy strategic intentions - Gain economic intelligence

46.13. 6.3.13 Spy on System (11)

Deploy surveillance operations to detect hostile fleet movements. Your scout ships monitor jump lane traffic, track enemy fleet positions, and provide early warning of invasions.

Requirements: - Fleet must contain **only Scout squadrons** (no combat ships or spacelift) - One or more scout squadrons allowed (multi-scout deployments supported) - Spy scouts are consumed permanently when deployed (cannot be recovered)

Spy Scout Travel & Mesh Bonuses: See Order 09 (Spy on Planet) for travel mechanics, detection rules, and mesh network bonuses

Intelligence Gathered: - All fleets present in system - Fleet compositions - Fleet orders (if detectable) - Recent fleet movements

Use Spy on System to: - Provide early warning of enemy attacks - Track hostile fleet movements - Identify enemy patrol patterns - Support strategic planning

46.14. 6.3.14 Colonize Planet (12)

Order ETACs (Enhanced Terrestrial Administrative Carriers) with Population Transfer Units to establish new colonies. Your fleet travels to the target system, deploys the PTUs, and establishes colonial infrastructure.

Requirements: - Fleet must contain at least one ETAC ship - ETAC must carry PTUs (Population Transfer Units) - Target system cannot already have a colony (one colony per system)

Results: - New colony established at infrastructure Level I - PTUs consumed (ETAC cargo emptied) - Awards prestige for expansion - **ETAC behavior after colonization:** - With AutoColonize standing order: Automatically returns home for PTU reload, then resumes colonization - Without standing orders: Remains at new colony (requires manual orders)

46.15. 6.3.15 Join Another Fleet (13)

Transfer your fleet to merge with another fleet at the same location. Consolidate forces, reinforce battle groups, or reorganize for strategic operations. All squadrons and spacelift ships from the source fleet are transferred to the target fleet, and the source fleet is disbanded.

Use Join Fleet to: - Reinforce damaged fleets with fresh squadrons - Consolidate scattered forces after combat - Create combined task forces for major operations - **Merge scout squadrons** to gain mesh network ELI bonuses before spy missions

Scout Mesh Network Formation:

When joining fleets containing scout squadrons, the scouts automatically gain mesh network bonuses based on total scout count (see assets.md Section 2.4.2 for mesh network modifier table): -

2-3 scouts: 1 ELI bonus - *4-5 scouts:* +2 ELI bonus - *6 scouts:* +3 ELI bonus (maximum)

Tactical Example: 1. Commission 3 single-scout squadrons at a staging system 2. Use Order 13 to merge scout fleets together 3. Deploy the consolidated 3-scout squadron on a spy mission 4. Benefit from +1 mesh network ELI bonus during mission and detection rolls

Spy Scout Fleet Merging:

Order 13 works with spy scout fleets deployed on intelligence missions (Orders 09/10/11): - **Normal Fleet → Spy Scout Fleet:** The spy scouts convert back to squadrons and join the normal fleet, spy scout fleet disbanded - **Spy Scout Fleet → Normal Fleet:** The spy scouts convert back to squadrons and join the target fleet, spy scout fleet disbanded - **Spy Scout Fleet → Spy Scout Fleet:** Scouts merge together, increasing mesh network bonuses (up to +3 ELI maximum)

Spy scout fleets operate transparently like normal fleets but accept limited orders (Hold, Move, spy missions, Join, Rendezvous, Salvage, Reserve/Mothball, ViewWorld)

46.16. 6.3.16 Rendezvous at System (14)

Order your fleet to travel to a designated system and await further instructions. Coordinate multi-fleet operations by designating rendezvous points. Multiple fleets with Rendezvous orders to the same system automatically merge when they arrive, with all forces consolidating into the fleet with the lowest ID.

Use Rendezvous to: - Coordinate multi-fleet invasions - Establish staging areas for offensives - Organize defensive concentrations - Merge spy scout fleets with normal fleets

Spy Scout Fleet Integration:

Spy scout fleets deployed on intelligence missions (Orders 09/10/11) can participate in rendezvous operations: - Spy scouts with Rendezvous orders to the same system are automatically collected - When rendezvous completes, spy scouts convert back to squadrons - All scout squadrons merge into the host fleet (lowest fleet ID) - Spy scout fleets are disbanded after merging - Mesh network bonuses preserved through scout counts

This allows spy scouts to rejoin normal operations after completing intelligence missions or to merge with other forces for combined operations

46.17. 6.3.17 Salvage (15)

Recover resources from destroyed ships and derelict facilities in friendly systems. Your fleet conducts salvage operations, recovering production points from battle debris.

Requirements: - Must be at friendly colony system - Recent battle debris present

Use Salvage to: - Recover resources after defensive battles - Maximize economic efficiency - Clean up post-battle debris

46.18. 6.3.18 Place on Reserve (16)

Place your fleet in Reserve status—reduced readiness with lower maintenance costs. Reserve fleets remain stationed at their colony with 50% maintenance cost and reduced combat effectiveness.

Reserve Status Effects: - Maintenance cost reduced to 50% - Combat effectiveness reduced (penalty TBD) - **Cannot move** (permanently stationed at colony) - Does NOT receive auto-assigned squadrons - Can issue Reactivate order to return to Active status

Use Reserve Status to: - Reduce military budget during peacetime - Maintain defensive reserves at major colonies - Store second-line forces for emergency mobilization

46.19. 6.3.19 Mothball Fleet (17)

Mothball your fleet for long-term storage—zero maintenance cost but defenseless. Mothballed fleets remain at their colony with no maintenance cost and cannot participate in combat.

Mothball Status Effects: - Maintenance cost reduced to 0% - **Cannot fight** - defenseless if attacked - **Cannot move** (permanently stationed at colony) - Does NOT receive auto-assigned squadrons - Must be screened by Active fleets during orbital combat or risks destruction - Can issue Reactivate order to return to Active status

Use Mothball to: - Store reserve forces during peacetime - Preserve ships for future conflicts - Maintain strategic reserve with minimal budget impact - **WARNING**: Mothballed fleets MUST be screened during combat

46.20. 6.3.20 Reactivate Fleet (18)

Reactivate Reserve or Mothballed fleets to Active status. Your fleet returns to full operational readiness with 100% maintenance cost and combat effectiveness.

Reactivation Effects: - Fleet status changes from Reserve/Mothballed to Active - Full maintenance cost resumes - Full combat effectiveness restored - Fleet can now move and execute all orders - Receives auto-assigned squadrons if stationary

Use Reactivate to: - Mobilize reserves during wartime - Respond to emerging threats - Return mothballed fleets to operational status

46.21. 6.3.21 View a World (19)

Send a fleet to perform long-range planetary reconnaissance from the edge of a solar system. Your ship approaches the system edge, conducts a long-range scan of the planet, then backs off into deep space—gathering intelligence without orbital approach or detection risk.

Intelligence Gathered: - **Planet Owner**: Which house controls the colony (if colonized) - **Planet Class**: Production potential (Hostile, Benign, Lush, etc.) - **Strategic Value**: Assess colonization priority for ETACs

Tactical Advantages: - **Deep Space Approach**: Ship remains in deep space, avoiding orbital combat - **Any Ship Type**: No specialized equipment required - **Early Intelligence**: Identify valuable targets before committing ETACs - **Diplomatic Safety**: No hostile act, safe for gathering intel on neutrals

Use View a World to: - Recon uncolonized systems before ETAC deployment - Identify high-value planets (Eden, Lush) for priority colonization - Map enemy territory and production capacity - Gather intelligence on neutral/hostile colonies without triggering combat

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Chapter 47. 6.4 Zero-Turn Administrative Commands

Reorganize your forces instantly during order submission. Zero-turn administrative commands execute immediately—before turn resolution begins—enabling you to prepare forces precisely for the upcoming turn without consuming time.

47.1. 6.4.1 Concept: Administrative vs Operational Orders

Administrative Commands (0 turns): - Fleet reorganization (detach ships, transfer squadrons, merge fleets) - Cargo operations (load/unload troops and colonists) - Squadron management (transfer ships between squadrons, assign to fleets) - Execute **immediately** during order submission - No turn cost—prepare forces and execute strategy in the same turn

Operational Orders (1+ turns): - Fleet movement, combat, espionage, colonization - Execute during turn resolution - Consume turns based on action complexity

Key Benefit: Combine multiple administrative commands with operational orders in a single turn. Load troops, reorganize fleets, and launch invasions—all in one coordinated action.

47.2. 6.4.2 Fleet Reorganization Commands

Reconfigure your fleet composition at friendly colonies without consuming turns.

Requirements: - Fleet must be at **friendly colony** (own colony under your control) - Colony cannot be under siege or blockade - All ships involved must be owned by your house

47.2.1. DetachShips

Extract specific squadrons and spacelift ships from a fleet into a new fleet.

Use cases: - Split battle fleet into multiple patrol groups - Detach damaged squadrons for repair while healthy squadrons continue operations - Create specialized task forces from general-purpose fleets - Separate spacelift ships (ETACs, Troop Transports) from combat squadrons

Mechanics: - Select ships by index from fleet's total ship roster - New fleet created automatically with selected ships - Source fleet retains unselected ships - If all ships detached, source fleet deleted and orders cleared

Example: Battle fleet at home system with 3 capital squadrons + 5 destroyers. Detach 1 capital squadron + 2 destroyers → creates new patrol fleet while main battle fleet continues with remaining forces.

47.2.2. TransferShips

Move squadrons and spacelift ships between two existing fleets.

Use cases: - Reinforce weakened patrol fleet from reserve fleet - Consolidate scattered forces before major offensive - Balance fleet compositions for optimal combat effectiveness - Transfer specialized assets (scouts, ETACs) between task forces

Mechanics: - Both fleets must be at same friendly colony - Select ships from source fleet to transfer to target fleet - Squadron cohesion preserved (entire squadron transfers together) - If source fleet emptied, automatically deleted

Example: Patrol fleet returns damaged (2 squadrons). Transfer 3 fresh squadrons from reserve fleet → patrol fleet reinforced and ready for immediate redeployment.

47.2.3. MergeFleets

Combine two fleets into a single unified force.

Use cases: - Consolidate multiple small fleets into battle group - Merge returning damaged fleet with fresh reinforcements - Combine specialized fleets for joint operations - Simplify fleet management by reducing total fleet count

Mechanics: - Source fleet merges entirely into target fleet - All squadrons and spacelift ships transfer to target - Source fleet deleted after merge - Target fleet retains its orders and standing orders - Fleet composition limits still apply

Example: 3 cruiser fleets return to home system. Merge all into single battle fleet → one unified command, simplified management, ready for coordinated offensive.

47.3. 6.4.3 Cargo Operations

Load and unload ground forces and colonists instantly during order submission.

Requirements: - Fleet at friendly colony - Compatible spacelift ships in fleet (Troop Transports for marines, ETACs for colonists) - Cargo available at colony (marines from garrison, colonists from population)

47.3.1. LoadCargo

Load marines or colonists from colony onto fleet spacelift ships.

Use cases: - Load invasion forces immediately before launching offensive - Embark colonists for same-turn colonization mission - Prepare garrison reinforcements for allied colonies

Mechanics: - **Marines**: Loaded onto Troop Transports from colony garrison - **Colonists**: Loaded onto ETACs from colony population (souls-based accounting) - Respects ship cargo capacity limits - Skips crippled ships (cannot carry cargo while damaged) - Colony retains minimum population threshold (cannot load last colonist)

Strategic Value: Load invasion forces and execute Order 07 (Invade) in same turn—immediate operational readiness.

Example: Prepare invasion of enemy colony. Load 10 marine divisions onto 5 Troop Transports, attach escorts, issue Order 07 (Invade target system) → invasion launches immediately. Total: 1 turn.

47.3.2. UnloadCargo

Unload marines or colonists from fleet spacelift ships to colony.

Use cases: - Deliver garrison reinforcements to border colonies - Evacuate colonists from threatened systems - Consolidate forces at strategic staging bases

Mechanics: - All cargo on fleet spacelift ships unloaded to colony - Marines added to colony garrison - Colonists added to colony population (souls + population units) - Instant transfer, no turn cost

Example: Evacuate colony threatened by superior enemy fleet. Load colonists, move fleet to safe system, unload colonists → population preserved, enemy gains empty colony.

47.4. 6.4.4 Squadron Management Commands

Fine-tune squadron composition and fleet assignments for optimal combat effectiveness.

Requirements: - Colony must be friendly and under your control - Squadrons must be at same colony (either in fleets or unassigned)

47.4.1. TransferShipBetweenSquadrons

Move individual escort ships between squadrons to balance combat power.

Use cases: - Balance destroyer distribution across capital squadrons - Optimize escort screens for different capital ship types - Reorganize after combat losses - Prepare specialized squadron configurations

Mechanics: - Source and target squadrons must be in fleets at same colony - Only escort ships can transfer (destroyers, frigates, corvettes) - Cannot transfer flagships (capital ships) - If target squadron at capacity, transfer fails - Rollback on failure (ship returns to source if transfer impossible)

Example: Battle fleet has 3 cruiser squadrons: CL with 4 destroyers, CL with 1 destroyer, CL with 2 destroyers. Transfer 1 destroyer from first to second → balanced squadrons (3, 2, 2) improve combat effectiveness.

47.4.2. AssignSquadronToFleet

Assign newly-commissioned squadrons from unassigned pool to specific fleets.

Use cases: - Manual control before auto-assignment runs - Assign squadrons to specific mission

fleets instead of default assignment - Create specialized task forces with precise composition - Override auto-assignment for strategic fleet builds

Mechanics: - Squadron can be in unassigned pool OR in existing fleet - Target fleet must exist at colony OR new fleet created if none specified - Squadron removed from source location - If source fleet emptied, deleted automatically - Executes before auto-assignment during turn resolution

Strategic Control: Issue commands during order submission to assign specific squadrons to specific fleets. Auto-assignment still handles remaining unassigned squadrons, but your manual assignments take priority.

Example: Colony completes 2 dreadnought squadrons + 4 cruiser squadrons. Use AssignSquadronToFleet commands to put dreadnoughts in battle fleet, cruisers in patrol fleet → precise control instead of automatic distribution.

47.5. 6.4.5 Workflow: Prepare Forces → Execute Strategy

Execute complex operations in a single turn by combining zero-turn commands with operational orders.

Example: Invasion Operation

Turn N submission: 1. **LoadCargo** marines onto transports (0 turns) 2. **Order 07: Invade Planet** (1 turn for transit + combat)

Turn N resolution: Fleet moves and invades. Total: 1 turn.

Example: Major Offensive

Launching 3-fleet offensive. Turn submission:

1. **MergeFleets** - Combine cruiser fleets into battle group
2. **DetachShips** - Split off scout squadron for recon
3. **LoadCargo** - Load 15 marine divisions
4. **AssignSquadronToFleet** - Add fresh dreadnought squadrons
5. **Issue Orders**:
    - Battle fleet: Order 07 (Invade)
    - Scout fleet: Order 11 (Spy on System)

All preparation complete, offensive launches immediately. Total: 1 turn.

47.6. 6.4.6 Limitations and Restrictions

Location Requirements: - Fleet operations require friendly colony presence - Cannot reorganize fleets in deep space or at enemy systems - Cannot load cargo at neutral systems

Combat Restrictions: - No zero-turn commands during active combat - Cannot reorganize while under siege or blockade - Damaged ships (crippled) cannot load cargo

Order Precedence: - Zero-turn commands execute before operational orders - Administrative commands processed in submission order - Auto-assignment runs after manual squadron assignments

Validation: - All commands validated before execution - Failed commands return error immediately (no partial execution) - State changes atomic (all-or-nothing per command)

Chapter 48. 6.5 Standing Orders

Establish persistent fleet behaviors that execute automatically when no explicit order is given. Standing orders reduce micromanagement by codifying routine behaviors—your fleets patrol routes, defend systems, and reinforce damaged units without constant supervision.

48.1. 6.5.1 Standing Order Types

Persistent behaviors that execute when fleet has no active mission:

Type	Purpose	Movement
None	No standing order (default)	No
PatrolRoute	Follow patrol path indefinitely	Yes
DefendSystem	Guard system, engage hostiles per ROE	No
GuardColony	Defend specific colony	No
AutoColonize	ETACs auto-colonize nearest suitable system	Yes
AutoReinforce	Join nearest damaged friendly fleet	Yes
AutoRepair	Return to shipyard when crippled	Yes
AutoEvade	Retreat if outnumbered per ROE	Yes
BlockadeTarget	Maintain blockade on enemy colony	No

48.2. 6.5.2 Standing Order Execution

Standing orders are persistent: Once assigned, your fleet executes the standing order every turn unless you issue an explicit order.

Explicit orders override temporarily: Issue a one-time order to interrupt standing order behavior. Your fleet executes the explicit order this turn, then automatically resumes its standing order next turn.

Standing orders support Rules of Engagement: Most defensive standing orders respect your ROE settings, determining when to fight and when to retreat.

48.3. 6.5.3 Patrol Route Standing Order

Establish indefinite patrol routes through multiple systems. Your fleet automatically travels the route system-by-system, engaging hostiles per ROE, providing continuous defensive coverage.

Configuration: - Define patrol path: ordered list of systems - Set Rules of Engagement (0-10 scale) - Fleet automatically cycles through route

Behavior: - Fleet travels to next system in route - Engages hostiles per ROE - Continues to next system - Cycles back to start when route completes

Use Patrol Route to: - Defend border regions spanning multiple systems - Maintain continuous presence in contested zones - Automate routine security operations

48.4. 6.5.4 Defend System Standing Order

Station your fleet for permanent system defense. Your fleet remains at the system, engages hostiles per ROE, and protects colonies without requiring repeated orders.

Configuration: - Target system (usually current location) - Rules of Engagement (0-10 scale)

Behavior: - Fleet remains at target system - Engages hostile fleets per ROE - Protects colonies and starbases - Automatically screens mothballed fleets during combat

Use Defend System to: - Create permanent defensive garrisons - Protect strategic colonies - Maintain defensive presence without micromanagement

48.5. 6.5.5 Guard Colony Standing Order

Defend a specific colony within a system. Functionally identical to Defend System but explicitly designates which colony to prioritize during combat.

Use Guard Colony to: - Prioritize specific colony defense in multi-colony systems - Designate which infrastructure to protect - Create colony-specific defensive postures

48.6. 6.5.6 Auto-Colonize Standing Order

Order ETAC fleets to autonomously identify and colonize nearest suitable systems. Your colonization fleets automatically expand your empire without explicit orders for each colony.

Requirements: - Fleet must contain ETACs with PTUs

Behavior: - Fleet identifies nearest uncolonized system - Travels to system automatically - Establishes colony - Resumes search for next target

Use Auto-Colonize to: - Automate expansion waves - Reduce colonization micromanagement - Ensure rapid territory acquisition during land grabs

48.7. 6.5.7 Auto-Reinforce Standing Order

Order your fleet to automatically reinforce the nearest damaged friendly fleet. Your fleet identifies allies in need, travels to their location, and transfers squadrons to restore combat effectiveness.

Behavior: - Fleet scans for damaged friendly fleets - Calculates nearest target - Travels to target

location - Transfers squadrons as appropriate - Resumes scanning for next target

Use Auto-Reinforce to: - Maintain frontline fleet strength - Automate battle damage replacement - Create mobile reinforcement fleets

48.8. 6.5.8 Auto-Repair Standing Order

Order damaged fleets to automatically return to shipyards when crippled. Your fleet recognizes critical damage, calculates nearest repair facility, and travels there automatically.

Behavior: - Fleet monitors squadron damage status - When crippled (threshold TBD), seeks repair - Identifies nearest colony with shipyard - Travels to repair facility - Conducts repairs - Resumes previous standing order or awaits orders

Use Auto-Repair to: - Preserve damaged units - Reduce fleet management micromanagement - Ensure damaged forces return to operational status

48.9. 6.5.9 Auto-Evade Standing Order

Order your fleet to automatically retreat when outnumbered per ROE settings. Your fleet continuously assesses threat levels and withdraws to safety when engagement becomes unfavorable.

Configuration: - Rules of Engagement (0-10 scale) determines retreat threshold

Behavior: - Fleet monitors hostile forces in system - Calculates force ratio - If outmatched per ROE, retreats to safe system - Resumes mission when threat clears

Use Auto-Evade to: - Protect valuable scouts and intelligence units - Preserve outnumbered forces - Avoid unfavorable engagements

48.10. 6.5.10 Blockade Target Standing Order

Maintain continuous blockade of enemy colony. Your fleet establishes orbital blockade and maintains it indefinitely, strangling enemy economy.

Configuration: - Target colony system - Rules of Engagement (determines when to fight defending fleets)

Behavior: - Fleet travels to target system if not present - Establishes orbital blockade - Engages defending forces per ROE - Maintains blockade continuously

Use Blockade Target to: - Maintain long-term economic pressure - Weaken enemy colonies before invasion - Automate blockade operations

48.11. 6.5.11 Rules of Engagement (ROE)

Configure standing order combat behavior with Rules of Engagement—a 0-10 scale determining when to fight and when to retreat.

ROE	Behavior
0-2	Extremely cautious - Retreat from any threat
3-5	Defensive - Fight only if superior
6-8	Aggressive - Fight unless clearly outnumbered
9-10	Suicidal - Fight to the death

Examples: - **Patrol Route with ROE=2**: Fleet patrols border but retreats from any hostile contact - **Defend System with ROE=8**: Fleet defends aggressively, fighting unless outnumbered 4:1 - **Auto-Evade with ROE=5**: Fleet retreats if enemy force equal or superior

Chapter 49. 6.5 Ship Repairs and Repair Queues

Damaged ships require shipyard facilities for repairs. Manage your repair priorities through explicit repair orders or automated repair queues. Balance repair capacity against construction demands to maintain fleet readiness.

49.1. 6.5.1 Damage and Repair Mechanics

Ships accumulate damage during combat: Hull damage, system damage, and critical hits degrade combat effectiveness. Heavily damaged ships risk destruction.

Shipyards conduct repairs: Colonies with shipyard facilities repair damaged ships. Repair speed depends on shipyard capacity and damage severity.

Repairs compete with construction: Shipyard capacity serves both repair and construction operations. Prioritize based on strategic needs—replace losses or repair existing forces.

49.2. 6.5.2 Repair Queues

Automatic repair prioritization: Your shipyards automatically queue damaged ships for repair. Ships with critical damage receive priority; light damage repairs later.

Manual queue adjustment: Override automatic prioritization by explicitly ordering specific ships to front of queue. Prioritize capital ships or critical escorts.

Repair time scales with damage: Lightly damaged ships repair quickly; heavily damaged ships require multiple turns. Monitor repair progress in colony management screens.

49.3. 6.5.3 Repair Strategy

Dedicated repair colonies: Establish rear-area colonies with extensive shipyard capacity for major repairs. Damaged fleets return to repair bases.

Forward repair facilities: Build shipyards at frontline colonies for rapid turnaround. Maintain fleet readiness near combat zones.

Emergency repairs: Lightly damaged ships remain operational. Save shipyard capacity for critically damaged units requiring immediate attention.

Auto-Repair standing orders: Configure damaged fleets to automatically return to designated repair facilities when crippled. Reduces micromanagement of battle-damaged forces.

End of Section 6

Chapter 50. 7.0 Combat

Destroy your enemies across three distinct combat theaters. Your fleets fight through space battles, orbital sieges, and planetary invasions to seize enemy colonies. Each theater demands different tactics, unit compositions, and strategic decisions.

This section covers combat mechanics, engagement rules, and the progressive nature of planetary conquest. Master these systems to project power effectively and defend your empire against invasion.

Chapter 51. 7.1 The Three Combat Theaters

Planetary conquest requires methodical progression through three combat phases. Your attacking fleets must win each theater before advancing to the next—no shortcuts, no bypassing defenses.

51.1. 7.1.1 Theater Progression

Space Combat (First Theater)

Fight enemy mobile fleets in deep space before reaching orbit. Your task forces engage defending fleets with full tactical mobility. Both sides maneuver, concentrate fire, and attempt to break enemy formations.

Who fights: - Your attacking fleets - Enemy mobile defenders (fleets with no Guard orders, active movement orders) - Undetected Raiders can ambush with combat bonuses

Outcome determines: - If attackers win: Proceed to orbital combat - If defenders win: Attackers retreat or are destroyed - If no mobile defenders present: Attackers proceed directly to orbital combat

Orbital Combat (Second Theater)

Assault fortified orbital defenses after achieving space superiority. Your fleets engage stationary defenders protecting the planet—guard fleets, reserve forces, starbases, and unassigned squadrons fight as a unified defensive position.

Who fights: - Your surviving attack fleets (if you won space combat) - Enemy guard fleets (fleets with Guard/Defend orders) - Enemy reserve and mothballed fleets - Enemy starbases (orbital installations with heavy firepower) - Enemy unassigned squadrons at colony - **Screened units protected**: Mothballed ships, spacelift vessels remain behind battle lines

Outcome determines: - If attackers win: Achieve orbital supremacy, proceed to planetary operations - If defenders win: Attackers retreat without reaching planet surface - If no orbital defenders: Attackers achieve supremacy unopposed

Planetary Combat (Third Theater)

Bombard planetary defenses and invade the surface after securing orbit. Your fleets destroy shields, neutralize ground batteries, and deploy invasion forces. The final phase before colony capture.

Who fights: - Your bombardment fleets (any combat squadrons) - Your invasion forces (marines from troop transports) - Enemy planetary shields (reduce bombardment damage) - Enemy ground batteries (fire on orbiting ships and landing forces) - Enemy ground forces (armies and marines defend against invasion)

Outcome determines: - Successful bombardment: Infrastructure destroyed, defenses weakened - Successful invasion: Colony captured, ownership transfers - Failed invasion: Your invasion forces destroyed, defenders retain control

51.2. 7.1.2 Why Progressive Combat Matters

No theater skipping: Your fleets cannot bypass defenses. Guard orders mean enemy fleets defend in orbital combat only—they don't participate in deep space battles. This creates strategic depth: defending admirals choose which fleets defend which theater.

Resource allocation: Attackers must maintain overwhelming force through all three phases. Winning space combat with 80% losses means facing orbital defenses with a crippled fleet. Plan for attrition.

Defender advantages: Each theater provides natural defensive advantages. Starbases add firepower in orbital combat. Planetary shields negate bombardment. Ground batteries threaten invasion forces. Defenders fight from prepared positions.

Chapter 52. 7.2 Combat Fundamentals

Every engagement follows consistent rules governing targeting, effectiveness, and resolution. Master these fundamentals to predict combat outcomes and design effective fleet compositions.

52.1. 7.2.1 Rules of Engagement (ROE)

Set your fleet's aggression level with Rules of Engagement—a 0-10 scale determining when to retreat during combat. ROE compares your total AS to enemy total AS.

ROE Retreat Thresholds:

ROE	Threshold	Meaning	Use Case
0	0.0	Avoid all hostile forces	Pure scouts, intel gathering
1	999.0	Engage only defenseless	Extreme caution
2	4.0	Need 4:1 advantage	Scout fleets, recon forces
3	3.0	Need 3:1 advantage	Cautious patrols
4	2.0	Need 2:1 advantage	Conservative operations
5	1.5	Need 3:2 advantage	Defensive posture
6	1.0	Fight if equal or superior	Standard combat fleets
7	0.67	Fight even at 2:3 disadvantage	Aggressive fleets
8	0.5	Fight even at 1:2 disadvantage	Battle fleets
9	0.33	Fight even at 1:3 disadvantage	Desperate defense
10	0.0	Fight regardless of odds	Suicidal last stands, homeworld defense

Morale Modifies Effective ROE:

Your house's prestige affects fleet morale, modifying effective ROE during combat:

Prestige	Morale Modifier	Effect on ROE
0 or less	-2	Fleets retreat much earlier (ROE 8 becomes ROE 6)

Prestige	Morale Modifier	Effect on ROE
1-20	-1	Fleets retreat earlier (ROE 8 becomes ROE 7)
21-60	0	No change
61-80	+1	Fleets fight longer (ROE 6 becomes ROE 7)
81+	+2	Fleets fight much longer (ROE 6 becomes ROE 8)

Homeworld Defense Exception: Fleets defending their homeworld NEVER retreat regardless of ROE or losses.

ROE affects standing orders: PatrolRoute with ROE=2 patrols but retreats unless 4:1 advantage. DefendSystem with ROE=8 fights even at 1:2 disadvantage.

ROE does NOT affect explicit orders: When you issue Bombard, Invade, or Attack orders, your fleet executes regardless of ROE. ROE only matters for automated retreat decisions during combat.

52.2. 7.2.2 Combat State and Damage

Squadrons exist in three combat states determining effectiveness:

Undamaged (Full Effectiveness) - Squadron operates at full Attack Strength (AS) and Defense Strength (DS) - Contributes full combat power to task force - Can execute all missions

Crippled (Severely Degraded) - Squadron suffers major damage reducing combat effectiveness - Squadron flagship is crippled; escort ships may be destroyed - Cannot traverse restricted jump lanes - Requires shipyard repairs (1 turn, 25% of flagship build cost) - Still operational but at reduced capability

Destroyed (Eliminated) - Squadron eliminated from combat - Flagship and all escort ships destroyed - Provides salvage value (50% of build cost at friendly colony) - Permanent loss unless rebuilt

Damage accumulation: Squadrons take damage during combat rounds. Sufficient damage cripples squadrons (flagship crippled, escorts may be lost). Additional damage beyond crippled destroys the entire squadron. Heavy firepower can destroy squadrons directly without crippling them first.

Destruction Protection: - Squadrons cannot go Undamaged → Crippled → Destroyed in the **same combat round** - If a squadron takes enough damage to cripple AND destroy it in one round, it stays Crippled - Next round, additional damage can destroy it - **Critical hits bypass protection**: Natural 9 on CER roll destroys immediately - Prevents instant-kill cheese, ensures multi-round engagements

Note: Combat targets squadrons as tactical units. Each squadron contains one flagship plus escort ships. When a squadron is destroyed, all ships in it are lost.

52.3. 7.2.3 Task Force Formation

Fleets combine into **task forces** during combat—unified battle groups that concentrate firepower and share detection.

Task force composition: - All squadrons from participating fleets - Starbases at system (orbital combat only) - Fighter squadrons at colony (if carriers present) - Unassigned squadrons at colony (orbital combat only)

Task force benefits: - Shared detection: ELI-equipped scouts detect cloaked enemies for entire task force - Concentrated firepower: All squadrons engage simultaneously - Screened units protected: Mothballed fleets and spacelift vessels stay behind combat squadrons

Multiple houses in combat: Three-way or four-way battles resolve with each house forming separate task forces. All hostile task forces engage each other based on diplomatic status (Enemy or Neutral).

52.4. 7.2.4 Cloaking and Detection

Raiders can cloak, becoming invisible until detected. Detection determines initiative and targeting.

Cloaking Mechanics: - **Raiders** can activate cloaking (stealth mode) - Cloaked Raiders invisible until detected - **Detection range**: 1 jump lane (adjacent systems) - **Detection sources**: ELI-equipped scouts, starbases (orbital combat only)

Detection is Probabilistic: - Detection is NOT automatic—it's a dice roll based on tech levels - ELI (Electronic Intelligence) tech level vs CLK (Cloaking) tech level - Multiple scouts improve detection through mesh network bonuses - See assets.md Section 2.4.2 for full ELI mesh network calculation - Starbases get +2 ELI bonus for detection

Ambush Advantage (Space Combat Only): - Undetected Raiders strike first - **+4 Combat Effectiveness Rating (CER)** bonus - Attacks before enemy capital squadrons can respond - Ambush advantage ONLY in space combat

Detection Effects (All Combat): - Detected Raiders lose ambush bonus - Detection shared across entire task force - Once detected in space combat, remain detected in orbital combat - Newly encountered Raiders in orbital combat get no ambush bonus (orbital defenses detect approaching threats)

Strategic Implications: - Scout fleets with ELI detect cloaked Raiders, negating ambush - Raider fleets without ELI opposition devastate unprepared enemies - Starbases provide detection in orbital combat (can't be surprised at home)

Chapter 53. 7.3 Space Combat

Engage enemy mobile fleets in deep space. Your task forces clash with full tactical freedom—the first theater of planetary conquest.

53.1. 7.3.1 Space Combat Participants

Mobile Fleets Engage When They Meet:

Space combat occurs when mobile fleets encounter each other in the same system. Combat engagement depends on **diplomatic status**:

Diplomatic Status Determines Combat: - **Enemy Status**: Combat occurs automatically (always hostile) - **Neutral Status**: Combat occurs if Neutral fleets have **threatening orders** (Invade, Bombard, Blitz, Blockade) in system you control - **Neutral + Non-Threatening**: No combat (peaceful coexistence) - **Non-Aggression Pact**: Combat does NOT occur (pact prevents hostilities, even with threatening orders)

Rules of Engagement (ROE 0-10):

ROE determines when your fleets **retreat** during combat, not whether combat starts. Set higher ROE for aggressive stands, lower ROE for cautious retreats when outmatched.

Mobile Fleet Types (Fight in Space Combat): - Fleets with **no orders** (default mobile posture) - Fleets with **Hold orders** (stationary but mobile-capable) - Fleets with **Patrol orders** (active patrol duty) - Fleets with **movement-based standing orders** (PatrolRoute, AutoReinforce, AutoRepair) - Fleets with **offensive mission orders** (Move, Invade, Bombard, Blockade) - **Active status fleets** without guard-specific orders

Who Does NOT Fight in Space Combat: - **Guard fleets**: GuardStarbase, GuardPlanet, DefendSystem orders - they defend in orbital combat only - **Reserve fleets**: Stationed at colony, fight in orbital combat only - **Mothballed fleets**: Offline, screened in orbital combat, cannot fight - **Starbases**: Fixed installations, orbital combat only

Multi-Faction Combat:

When three or more houses have mobile fleets in the same system: - **Single unified battle** with all houses present - Each house forms separate task force - Each squadron targets hostile houses based on diplomatic status - Enemy status: Always hostile - Neutral status: Hostile if they have threatening orders in your controlled system - Non-Aggression Pact: Never hostile - All combat phases (Raiders, Fighters, Capitals) resolve simultaneously with multi-faction targeting

53.2. 7.3.2 Combat Initiative and Phases

Space combat resolves in three phases determining strike order:

Phase 1: Undetected Raiders (Ambush)

Cloaked Raiders without ELI opposition strike first with +4 CER bonus. Devastating alpha strike

before enemy responds.

Conditions: - Raiders present in task force - No enemy ELI-equipped scouts to detect them - Raiders get ambush bonus (+4 CER)

Phase 2: Fighter Squadrons (Intercept)

Carrier-launched fighters engage after Raiders but before capital ships. Fast interceptors screen the main fleet.

Conditions: - Carriers present with loaded fighter squadrons - Fighters launch and engage enemy formations - **Fighters do NOT roll CER**—they deal full AS as damage (100% effectiveness always)

Fighter Tactical Employment:

Fighters excel as force multipliers and screening units. Use them strategically:

The Carrier/Fighter Dynamic:

Carriers and fighters form a symbiotic combat relationship with unique vulnerabilities:

- **Fighters protect carriers**: Fighters engage in Phase 2, eliminating enemy fighters and carriers before your carriers face fire in Phase 3
- **Carriers enable fighters**: Embarked fighters deploy anywhere without colony infrastructure
- **Mutual dependence**: If your carrier dies, all embarked fighters die with it—no survival, no re-embarkment
- **Strategic implication**: Lose your carriers early and your fighters deploy but become stranded; lose your fighters and your carriers become priority targets

Carrier Strike Groups: - Carriers with embarked fighters project power without colony infrastructure - 5-10 embarked fighters deploy instantly when carrier enters combat - **Critical**: Protect carriers at all costs—carrier destruction means fighter destruction - Fighters re-embark after combat (remain carrier-owned) - Use fighters to screen carriers from enemy fire

Colony Defense: - Planet-based fighters never retreat (fight to the death) - Ideal for fortress colonies and chokepoints - Colony fighters + carrier fighters stack for overwhelming local superiority - Example: 8 colony fighters + 5 carrier fighters = 13 FS in battle

Fighter vs Fighter Combat: - Fighters prioritize enemy fighters first (counter-air mission) - Winning fighter superiority protects capital squadrons - Losing fighter superiority exposes your fleet to enemy fighter strikes

Anti-Carrier Operations: - Fighters target carriers (Bucket 2) after enemy fighters eliminated - Stripping enemy carriers eliminates their fighter advantage - Concentrate fighters to overwhelm carrier defenses

Screening Role: - Fighters absorb enemy fire before capital squadrons engage - Low DS means fighters die quickly but buy time - Sacrificial screening protects high-value battleships and dreadnoughts

Fighter Fragility: - Fighters skip crippled state: Undamaged → Destroyed - No retreat, no repairs—fighters are expendable - Replace losses through colony production (requires capacity)

Phase 3: Capital Squadrons (Main Engagement)

Battleship, Dreadnought, Cruiser, and Destroyer squadrons exchange fire. The decisive engagement phase.

Conditions: - All capital squadrons and escorts engage - Standard CER calculations - Majority of combat damage occurs here

53.3. 7.3.3 Combat Effectiveness Rating (CER)

CER determines strike effectiveness—how much damage your squadrons inflict. Each attacking squadron rolls for CER independently.

CER Calculation Process:

1. **Roll 1d10** (result 0-9, treat 10 as 0)
2. **Add modifiers**:
   - Scouts in task force: +1
   - Morale modifier (see table below): -1 to +2
   - Surprise (first round only): +3
   - Ambush (Raiders, space combat, first round): +4
3. **Look up effectiveness multiplier**:

Morale Check CER Bonuses:

At the start of each turn, roll 1d20 to determine morale effects for that turn:

Morale Level	Morale Threshold	Effect on Success
Collapsing	Never succeeds	-1 to all CER rolls this turn
VeryLow	> 18	No effect
Low	> 15	+1 to CER for one random squadron
Normal	> 12	+1 to all CER rolls this turn
High	> 9	+1 CER + one critical auto-succeeds
VeryHigh/Exceptional	> 6	+2 to all CER rolls this turn

Note: Morale levels and thresholds defined by house prestige—see reference.md for current configuration

CER Table:

Modified 1D10 Die Roll	Space Combat CER
Less than zero, 0, 1, 2	One Quarter (0.25) (round up)
3, 4	One Half (0.50) (round up)
5, 6	Three Quarters (0.75) (round up)
7, 8	One (1)
9*	One* (1)
9+	One (1)

*If the die roll is a natural nine before any required modification, then a critical hit is achieved

1. **Calculate damage**: Total Hits = Squadron AS × CER Multiplier (round up)

Critical Hits: - **Natural roll of 9** (before modifiers) = Critical Hit - Bypasses destruction protection (can destroy Undamaged → Destroyed in one round) - **Force Reduction**: If critical hit damage insufficient to reduce target (damage < target DS), the **weakest squadron** in enemy task force is reduced instead (lowest DS squadron takes the hit)

Overkill Damage:

When multiple squadrons independently target the same enemy squadron: - **Combined damage** from all attackers applies to target - If combined damage would destroy squadron in same round it's crippled: - **If ANY attacker rolled critical**: Destruction protection bypassed, squadron destroyed - **If NO critical hit**: Destruction protection applies, squadron stays crippled, excess damage lost - Prevents multiple attackers from wasting firepower on already-dead targets

Example: - Battleship squadron: AS 50 - Roll: 5 (natural) - Modifiers: +1 (scouts) +1 (high morale) = +2 - Modified roll: 7 → CER 1.00× - Damage: 50 × 1.00 = 50 hits

53.4. 7.3.4 Target Selection

Squadrons target enemies using priority buckets—categories determining which enemies to shoot first.

Targeting Priority Buckets:

Bucket	Unit Type	Base Weight	Priority
1 – Raider	Squadron with Raider flagship	1.0	Highest
2 – Capital	Squadron with Cruiser or Carrier flagship	2.0	High
3 – Destroyer	Squadron with Destroyer flagship	3.0	Medium
4 – Fighter	Fighter squadron (no capital flagship)	4.0	Low

Bucket	Unit Type	Base Weight	Priority
5 – Starbase	Orbital installation	5.0	Lowest

Notes: - Lower bucket numbers = higher targeting priority - Fighter squadrons consist entirely of fighter craft (no capital ship flagship) - Starbases are orbital installations, not squadrons - Targeting walks buckets in order: Raider → Capital → Destroyer → Fighter → Starbase

Special Rule: Fighter Squadron Targeting

Fighter squadrons launched from carriers target enemy fighters first (fighter-vs-fighter combat), then proceed to standard bucket priority if no enemy fighters remain.

Weighted Random Selection

Within each bucket, targets selected randomly weighted by Defense Strength—tougher squadrons (higher DS) more likely to be targeted. This represents fire concentration on the biggest threats.

Crippled Squadron Targeting: - Crippled squadrons get **2× targeting weight** - Makes them more likely to be finished off - Represents opportunistic fire on damaged enemies - Example: Crippled Battleship (DS 40) has targeting weight of 80

53.5. 7.3.5 Combat Rounds

Combat resolves in rounds—simultaneous exchanges of fire continuing until one side retreats or is destroyed.

Round Sequence:

1. **Target Selection**: Both sides assign targets per priority buckets
2. **Damage Calculation**: Calculate damage based on AS, CER, and target DS
3. **Apply Damage**: Squadrons crippled or destroyed
4. **Update Combat State**: Remove destroyed squadrons, update crippled squadrons
5. **Retreat Check**: Losing side checks morale and ROE for retreat decision
6. **Repeat**: Continue until combat ends

Maximum Rounds: 20 rounds per combat (prevents infinite combat)

Round Duration: Each round represents approximately 30-60 minutes of engagement time

Desperation Mechanics:

If combat stalls (5 consecutive rounds without any squadron state changes): - Both sides get **+2 CER bonus** for one "desperation round" - Represents desperate all-out attacks to break the stalemate - After desperation round, combat continues normally - If still no progress after desperation, moves toward 20-round stalemate

53.6. 7.3.6 Retreat Mechanics

Losing fleets can retreat before total destruction. Retreat saves surviving squadrons but concedes the battlefield.

Retreat Triggers: - CER disadvantage exceeds threshold (significantly outmatched) - Losses exceed acceptable percentage per ROE settings - Morale collapse (excessive casualties break formation) - Commander discretion (standing orders respect ROE retreat thresholds)

Retreat Consequences: - Retreating fleet moves to nearest friendly system via jump lanes - Attackers who retreat fail their mission (invasion aborted, bombardment incomplete) - Defenders who retreat cede space superiority (attackers proceed to orbital combat) - Crippled squadrons may be lost during retreat if cannot traverse restricted lanes

Pursuit: Victorious fleet does NOT automatically pursue retreating enemies. Pursuit requires explicit orders (Move to follow) or standing orders (PatrolRoute, AutoReinforce).

Multi-House Retreat Priority:

When 3+ houses attempt to retreat simultaneously: 1. **Weakest retreats first**: Houses retreat in ascending order of total AS (weakest first) 2. **Ties broken by house ID**: If equal AS, alphanumeric house ID order 3. **Re-evaluation**: After each retreat, remaining houses re-check ROE against new enemy strength 4. **Cancel option**: Re-evaluation may cause house to cancel retreat and continue fighting 5. **One retreats**: Other houses continue battling until their own ROE triggers

53.7. 7.3.7 Victory Conditions

Space combat ends when:

Attacker Victory: - All mobile defenders destroyed or retreated - Attackers achieve space superiority - **Result**: Proceed to orbital combat phase

Defender Victory: - All attackers destroyed or retreated - Defenders maintain space control - **Result**: Attackers repelled, mission failed

Mutual Withdrawal: - Both sides retreat simultaneously - Rare but possible with evenly matched forces - **Result**: Status quo maintained, no territorial change

Multi-House Prestige Attribution:

When 3+ houses participate in combat, prestige for kills is awarded based on who dealt the crippling blow: - **Squadron destroyed**: House that dealt crippling blow gets prestige - **Already-crippled squadron finished off**: All attacking houses share prestige equally (minimum 1 per house) - **Fleet retreats**: All houses engaged with retreating fleet share prestige equally - **Critical**: Track damage sources to determine crippling blow attribution

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Chapter 54. 7.4 Orbital Combat

Assault fortified colony defenses after winning space superiority. Your fleets engage guard forces, reserve fleets, starbases, and orbital squadrons in a unified defensive position.

54.1. 7.4.1 Orbital Combat Participants

Attackers (If They Won Space Combat): - All surviving attack fleets from space combat - Any fleets that bypassed space combat (if no mobile defenders present)

Orbital Defenders (All Fight Simultaneously): - **Guard fleets**: Fleets with GuardStarbase, GuardPlanet, DefendSystem orders - **Reserve fleets**: 50% maintenance fleets stationed at colony (reduced combat effectiveness) - **Mothballed fleets**: 0% maintenance fleets (CANNOT FIGHT - must be screened) - **Starbases**: Orbital installations with heavy firepower and detection capability - **Unassigned squadrons**: Combat squadrons at colony not assigned to fleets - **Fighter squadrons**: Colony-based fighters (if not already loaded on carriers)

Screened Units (Protected, Do Not Fight): - Mothballed ships (offline, defenseless) - Spacelift vessels (no combat capability) - These units hide behind defending task force; destroyed if defenders eliminated

54.2. 7.4.2 Orbital Combat Differences from Space Combat

No Ambush Bonus: - Orbital defenses detect all approaching threats - Raiders get NO +4 CER bonus in orbital combat - Detection sharing still works (starbases provide detection)

Starbases Participate: - Starbases add significant AS/DS to defender task force - Fixed installations with heavy firepower - Cannot retreat—fight to destruction or victory

Reduced Mobility: - Defenders fight from fortified positions - Attackers cannot maneuver as freely (planetary gravity well) - Retreat harder for attackers (must break orbit under fire)

Screened Unit Vulnerability: - If defenders eliminated, screened units exposed - Mothballed ships destroyed if not protected - Spacelift vessels destroyed if defenders fail

54.3. 7.4.3 Reserve Fleet Combat Penalty

Reserve fleets fight at reduced effectiveness: - **Reduced AS/DS**: Half combat strength (maintenance savings = readiness trade-off) - Still better than no defense - Can be reactivated to full strength (Reactivate order, returns to Active status)

54.4. 7.4.4 Victory Conditions

Attacker Victory: - All orbital defenders destroyed or retreated - Attackers achieve orbital supremacy - **Result**: Proceed to planetary bombardment/invasion phase

Defender Victory: - All attackers destroyed or retreated - Orbital defenses hold - **Result**: Colony remains secure, invasion repelled

Screened Unit Loss: - If attackers win, mothballed/spacelift units destroyed - Significant economic and strategic loss - Defenders should activate mothballed fleets before combat if threatened

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Chapter 55. 7.5 Planetary Bombardment

Destroy enemy infrastructure and defenses from orbit after achieving orbital supremacy. Your fleets systematically dismantle planetary shields, neutralize ground batteries, and reduce industrial capacity.

55.1. 7.5.1 Bombardment Execution

Requirements: - Orbital supremacy achieved (won orbital combat) - Combat-capable squadrons present (AS > 0) - Bombard order issued to fleet

Bombardment Process:

Each turn of bombardment (up to 3 rounds), your fleet attacks planetary defenses. Shields reduce incoming damage, but hits penetrate to damage batteries, ground forces, and infrastructure simultaneously:

Bombardment Damage Flow:

1. **Calculate Bombardment Hits** (AS × CER)
    - Your fleet's total Attack Strength
    - Roll 1d10 on Bombardment CER table (see below)
    - Planet-Breaker AS counted separately (bypasses shields)

Bombardment CER Table:

1D10 Die Roll	Bombardment CER
0, 1, 2	One Quarter (0.25) (round up)
3, 4, 5	One Half (0.50) (round up)
6, 7, 8	One (1)
9*	One* (1)

*Critical hits apply only against attacking squadrons (ground batteries firing back), not against ground targets

1. **Shields Reduce Conventional Hits**
    - Planetary shields reduce conventional ship damage by percentage (20%-70% based on SLD level)
    - Planet-Breaker hits bypass shields entirely
    - Total effective hits = Planet-Breaker hits + (reduced conventional hits)
2. **Hits Flow Through Defenses in Order:**
    - **First**: Ground batteries absorb hits (crippled, then destroyed)
    - **Excess hits**: Damage ground forces (armies and marines)

- **Remaining excess**: Destroy infrastructure (IU loss)

Key Mechanics: - Shields slow damage but don't prevent it—batteries, forces, and infrastructure can be damaged in the same turn - Ground batteries fire back each round (can cripple/destroy bombarding squadrons) - Multiple bombardment turns gradually overwhelm defenses - Higher shield levels reduce more damage, prolonging defensive survival

55.2. 7.5.2 Planetary Shields

Shields reduce bombardment damage from conventional ships. Higher shield levels block larger percentages of incoming hits.

Shield Levels and Damage Reduction:

SLD Level	% Chance	1D20 Roll	% of Hits Blocked
SLD1	15%	> 17	25%
SLD2	30%	> 14	30%
SLD3	45%	> 11	35%
SLD4	60%	> 8	40%
SLD5	75%	> 5	45%
SLD6	90%	> 2	50%

Shield Mechanics: - Each bombardment round, roll 1d20 to see if shields activate - If roll meets or exceeds threshold, shield blocks percentage of conventional hits - Shields reduce hits, they don't prevent them—damage still penetrates to batteries/infrastructure - Planet-Breaker hits bypass shields entirely (no reduction) - Shields remain active throughout bombardment (don't "degrade" or "get destroyed") - Shields only destroyed when Marines land during invasion

Planet-Breaker Advantage:

Planet-Breaker ships bypass ALL shield levels: - Planet-Breaker AS ignores shield reduction completely - Mixed fleets: Planet-Breaker AS + (reduced conventional AS) = total hits - Expensive (400 PP) but essential for high-shield fortress worlds - Strategic siege weapon for heavily defended targets

55.3. 7.5.3 Ground Batteries

Ground-based defensive installations fire on orbiting ships. Batteries threaten bombarding fleets and invasion forces.

Ground Battery Mechanics: - Each battery has attack strength - Targets orbiting ships randomly - Can cripple or destroy bombarding vessels - Battery fire continues until batteries destroyed - Multiple batteries = sustained defensive fire

Neutralizing Batteries: - Bombardment hits damage batteries first (before ground forces or infrastructure) - Shields reduce conventional hits but don't prevent battery damage - Each battery

can be crippled (reduced AS) then destroyed - All batteries must be destroyed before invasion can proceed

Strategic Considerations: - High battery count = dangerous bombardment - Weak bombarding fleet risks losses to battery fire - Alternative: Starve colony via blockade instead of bombardment

55.4. 7.5.4 Infrastructure Damage

Excess bombardment hits (after damaging batteries and ground forces) destroy colony infrastructure:

Infrastructure Damage Effects: - **Production loss**: Each percentage point reduces GDP - **Facility destruction**: Spaceports, shipyards can be destroyed - **Population casualties**: Souls lost to bombardment - **Morale impact**: Defender prestige loss, attacker diplomatic penalties

Damage Accumulation: - Infrastructure damage percentage increases each bombardment turn - 10% damage = 10% production loss - 50% damage = colony crippled - 100% damage = colony ruins (remains colonized but devastated)

Repair Costs: - Damaged infrastructure requires PP investment to repair - Repair time scales with damage percentage - Captured colonies often require extensive rebuilding

55.5. 7.5.5 Bombardment Strategy

Prolonged Siege: - Bombard over multiple turns to systematically destroy defenses - Reduces invasion risk by eliminating batteries and shields - Expensive in time and fleet commitment - Generates diplomatic penalties

Quick Assault: - Minimal bombardment, immediate invasion - Risks heavy invasion casualties - Captures infrastructure intact - Faster conquest but higher military cost

Blockade Alternative: - Blockade colony instead of bombardment (GuardPlanet/BlockadePlanet orders) - Cuts production 50% without destruction - Starves defenders over time - Less diplomatic penalty than bombardment

Chapter 56. 7.6 Planetary Invasion and Blitz

Seize enemy colonies by landing ground forces after achieving orbital supremacy. Your marines and armies fight defending ground forces for control of the planet surface.

56.1. 7.6.1 Planetary Invasion

Land ground forces to conquer enemy colonies. Invasion requires orbital supremacy, loaded troop transports, and overwhelming ground superiority.

Invasion Requirements: - Orbital supremacy achieved (won orbital combat) - **ALL ground batteries destroyed** (mandatory—batteries fire on landing transports) - Troop Transports with loaded Marines (MD = Marine Division) - Invade order issued to fleet

Invasion Process:

1. **Bombardment Round**
   - Conduct ONE round of bombardment first (Section 7.5)
   - Ground batteries must be destroyed before landing
   - If batteries remain after bombardment round, invasion fails (cannot land)
   - If all batteries destroyed, proceed to landing
2. **Landing Phase**
   - Marines land—shields and spaceports immediately destroyed upon landing
   - Transports unload marines (troops committed to battle)
3. **Ground Combat Phase**
   - **Both sides roll 1d10 on Ground Combat Table**
   - Calculate hits: AS × Ground CER → damage to enemy forces
   - Apply hits to ground units (cripple, then destroy)
   - Repeat rounds until one side eliminated

Ground Combat Table:

1d10 Roll	Ground CER Multiplier
0-2	0.5× (round up)
3-6	1.0×
7-8	1.5× (round up)
9	2.0×

Ground Forces:

Attackers: - Marines from Troop Transports (1 MD per transport) - Each MD: AS 10, DS 10 (from config) - Marines fight at full strength

Defenders: - Ground Armies (garrison forces): AS 8, DS 8 each - Defending Marines (colony-based): AS 10, DS 10 each - Combined ground strength

Combat Resolution:

Both sides roll each round, exchange fire, until one side eliminated: - Units crippled: AS reduced to 50% - Crippled units destroyed if all others crippled - Battle continues until total elimination - **If attackers win**: Colony captured, **50% IU destroyed** by loyal citizens before order restored - **If defenders win**: Invasion repelled, attacker marines destroyed

56.2. 7.6.2 Planetary Blitz

Conduct rapid combined bombardment + invasion operations. Blitz sacrifices safety for speed—marines land under fire from ground batteries.

Blitz Requirements: - Orbital supremacy achieved - Loaded Troop Transports present - Blitz order issued to fleet - **No requirement for weak defenses**—blitz works against any target (risky against strong defenses)

Blitz Mechanics:

Blitz combines bombardment and ground combat in compressed sequence:

1. **Bombardment Round (Transports Vulnerable)**
   - Conduct ONE round of bombardment (Section 7.5)
   - **Ground batteries fire at Troop Transports** (included as units in fleet)
   - Transports can be destroyed before landing marines
   - No civilian infrastructure targeted (avoid damage to assets)
2. **Landing Phase (If Transports Survive)**
   - Marines land immediately (don't wait for batteries eliminated)
   - **Marines fight at 0.5× AS** (quick insertion penalty, evading batteries)
   - Shields, spaceports, batteries seized intact if successful
3. **Ground Combat**
   - Same Ground Combat Table as invasion (1d10 roll)
   - Marines at half AS disadvantage
   - Repeat rounds until one side eliminated
   - **If attackers win**: All assets seized intact (**0% IU destroyed**)
   - **If defenders win**: Invasion repelled, attacker marines destroyed

When to Use Blitz:

Advantages: - Seizes colony infrastructure intact (no IU loss on victory) - Captures shields, batteries, spaceports - Faster than methodical bombardment + invasion - Good against weak defenses

Risks: - Transports vulnerable during bombardment round (can be destroyed) - Marines fight at half AS (quick insertion penalty) - High casualty risk against strong ground batteries - Dangerous against heavily fortified colonies (high shields, many batteries, large garrison)

56.3. 7.6.3 Invasion Strategy

Overwhelming Force: - Bring 2:1 marine superiority minimum - Reduces casualties, ensures victory - Expensive but decisive

Bombardment Preparation: - Destroy shields and batteries before invasion - Reduces marine casualties during landing - Preserves marine strength for ground combat - Takes more time but safer

Blockade + Starvation: - Blockade colony for multiple turns - Production halved, garrison weakens over time - Invade after defenders weakened - Minimizes military losses, maximizes time cost

Blitz Expansion: - Use blitz against weak frontier colonies during land grabs - Speed captures territory before rivals - Accept higher casualties for strategic advantage - Effective early-game expansion tool

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Chapter 57. 7.7 Combat Examples

Practical scenarios demonstrating combat theater progression and strategic decision-making.

57.1. 7.7.1 Example: Standard Planetary Invasion

Scenario: House Atreides invades House Harkonnen colony at Giedi Prime.

Turn 1 - Space Combat: - Atreides fleet (3 Battleships, 6 Destroyers) enters Giedi Prime - Harkonnen mobile defender (2 Cruisers, 4 Frigates) intercepts - Space combat: Atreides wins (superior firepower), 1 Battleship crippled - Harkonnen fleet retreats to adjacent system - **Result**: Atreides achieves space superiority, advances to orbital combat

Turn 2 - Orbital Combat: - Atreides surviving fleet (2 Battleships, 1 crippled, 6 Destroyers) engages orbital defenses - Harkonnen orbital defense: 1 Guard fleet (Light Cruiser + 3 Destroyers), 2 Starbases, 5 unassigned squadrons - Orbital combat: Atreides wins (overwhelming numbers), 2 Destroyers destroyed - Harkonnen starbases destroyed, guard fleet eliminated - **Result**: Atreides achieves orbital supremacy, proceeds to bombardment

Turn 3-5 - Bombardment: - Atreides bombards SLD-4 shield (4 turns to destroy) - Ground batteries fire back, cripple 1 Destroyer - Turn 5: Shield destroyed, batteries neutralized - **Result**: Planet defenses eliminated, ready for invasion

Turn 6 - Invasion: - Atreides lands 6 Marine Divisions - Harkonnen garrison: 3 Armies + 2 Marine Divisions - Ground combat: Atreides 6 MD vs. Harkonnen 5 ground units - Atreides wins (slight superiority), 2 MD lost - **Result**: Colony captured, ownership transfers to Atreides

Total Cost: 6 turns, 1 Battleship crippled, 2 Destroyers destroyed, 2 Marine Divisions lost, 1 Destroyer crippled by batteries

57.2. 7.7.2 Example: Blitz Operation

Scenario: House Corrino blitzes weakly defended rebel colony.

Turn 1 - Space Combat: - Corrino fleet (1 Battle Cruiser, 4 Destroyers, 2 Troop Transports) enters system - No mobile defenders present - **Result**: Automatic space superiority, proceed to orbital combat

Turn 1 - Orbital Combat (Same Turn): - Rebel defense: 1 unassigned squadron (Light Cruiser), no starbases - Corrino wins easily, Light Cruiser destroyed - **Result**: Orbital supremacy achieved

Turn 1 - Blitz Operation (Same Turn): - Corrino issues Blitz order - Fleet bombards while transports land simultaneously - Minimal shield (SLD-1), few batteries - 2 Marine Divisions land and engage - Rebel garrison: 1 Army - Blitz successful: Colony captured - **Result**: Colony captured in single turn

Total Cost: 1 turn, no ship losses, minor marine casualties

Comparison: Standard invasion would take 4-5 turns (bombardment + invasion). Blitz sacrificed

methodical approach for speed, accepting slightly higher marine casualties.

57.3. 7.7.3 Example: Failed Invasion

Scenario: House Ordos attempts invasion of heavily fortified Ix.

Turn 1 - Space Combat: - Ordos fleet (2 Dreadnoughts, 4 Cruisers) enters Ix - Ix mobile defense (3 Battle Cruisers, 8 Destroyers, ELI scout) - ELI scout detects Ordos Raider (no ambush bonus) - Space combat: Ordos loses (outnumbered, no ambush advantage) - 1 Dreadnought destroyed, 2 Cruisers crippled - **Result**: Ordos fleet retreats to friendly system, invasion fails before reaching orbit

Lessons: - Space superiority crucial—cannot skip theater - ELI detection negated Raider ambush advantage - Ordos should have brought overwhelming force or reconnoitered first

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End of Section 7

Chapter 58. 8.0 Diplomacy & Espionage

Chapter 59. 8.1 Diplomacy

In EC4X, diplomacy includes enemy, hostile, neutral, and ally classifications. As House Duke, your mandate is to lead your House to victory by strategic means, where diplomacy plays a pivotal role alongside the sword. Your primary directive remains decisively managing your adversaries, leveraging both military might and diplomatic cunning.

TODO: provide a table of the four diplomatic states. Show automatic triggers and distinguish between intentional diplomatic actions. Provide an explanation of the treaty system.

59.1. 8.1.1 Allies

You can enter into formal or informal agreements with other Houses to not attack each other, allowing for cooperation or at least a mutual stance of non-hostility.

This can include: - Joint Military Operations: Against common threats or for mutual defense without direct conflict between the signing parties. - Territorial Recognition: Agreements to respect each other's territories. - Strategic Flexibility: While not allies, Houses in a non-aggression pact can share intelligence and coordinate against mutual enemies.

Violation Consequences:

Attacking an ally partner constitutes immediate pact violation. When a violation is detected during the Conflict Phase per Section 1.3.1, the diplomatic status automatically converts to Enemy and takes effect at the start of the next turn's Conflict Phase.

Penalties for Violating House: - **Immediate Prestige Loss: PactViolation** penalty - see Table 9.4 - **Dishonored Status:** For 3 turns, other houses receive +1 prestige (**DishonoredBonus**) when they attack the violator (represents reputational damage) - see Table 9.4 - **Diplomatic Isolation:** Cannot establish new Non-Aggression Pacts with any house for 5 turns - **Repeat Violations:** Each subsequent violation within 10 turns incurs **RepeatViolation** penalty - see Table 9.4

Diplomatic Reinstatement: Alliance Pacts cannot be reinstated between the same houses for 5 turns after violation. The Dishonored status and diplomatic isolation apply to all houses, not just the betrayed partner, reflecting widespread loss of trust in the galactic community.

59.2. 8.1.2 Neutral

Your fleets are instructed to avoid initiating hostilities with the designated neutral House outside of your controlled territory. This status allows for coexistence in neutral or contested spaces without immediate aggression.

59.3. 8.1.3 Hostile

Combat engangements in deep space trigger hostile status between houses.

59.4. 8.1.4 Enemy

Your fleets are commanded to engage with the forces of the declared enemy House at every opportunity, both within and outside controlled territories.

This state leads to full-scale warfare where all encounters are treated as hostile, pushing for direct and aggressive confrontations.

59.5. 8.1.5 Defense Protocol

Regardless of diplomatic status, all your units will defend your House colonies against any foreign incursions with maximum aggression.

Your fleets will retaliate against direct colony attacks regardless of diplomatic state, in accordance with ROE.

59.6. 8.1.6 Territorial Control

Your house controls territory in systems containing your colony. Each system can contain only one colony per the colonization rules in Section 6.2.13.

Territory Classifications:

- **Controlled Territory**: Systems containing your house's colony
- **Foreign Territory**: Systems containing another house's colony
- **Neutral Space**: Systems without any colonies

Diplomatic Application:

Neutral diplomatic status (Section 8.1.2) governs behavior outside your controlled territory. Within your controlled territory, you may engage neutral forces per Defense Protocol (Section 8.1.5). Enemy status (Section 8.1.4) applies in all territories regardless of location.

Chapter 60. 8.2 Subversion & Subterfuge

The Space Guilds are key players in the clandestine world of diplomacy and espionage. They dominate trade, technology sharing, and offer covert operations, wielding influence through subterfuge and strategic manipulation. While their partnerships can significantly enhance your House's capabilities, the Space Guilds remain neutral—their loyalties bought by the highest bidder or the most strategic offer.

You can allocate Espionage Budget points (EBPs) toward various espionage actions every turn.

EBP points **cost 40 PP each**.

If you invest more than 5% of your turn budget into EBP, you lose Prestige points.

- Investments > 5% lose 1 Prestige point for each additional 1% invested over 5%.
- Example: If your turn budget is 100 points and you invest 7 points in EBP, you lose 2 Prestige points.

Restrictions:

- Maximum of One Espionage Action Per Turn.

Espionage Action	Cost in EBPs	Description	Prestige Change for Player	Prestige Change for Target
Tech Theft	5	Attempt to steal critical R&D tech.	+20	-30
Sabotage (Low Impact)	2	Small-scale sabotage to a colony's industry.	+10	-10
Sabotage (High Impact)	7	Major sabotage to a colony's industry.	+30	-50
Assassination	10	Attempt to eliminate a key figures within the target House.	+50	-70
Cyber Attack	6	Attempt to hack into a Starbase's systems to cause damage and chaos.	+20	-30
Economic Manipulation	6	Influence markets to harm the target's economy	+30	-7

Espionage Action	Cost in EBPs	Description	Prestige Change for Player	Prestige Change for Target
Psyops Campaign	3	Launch a misinformation campaign or demoralization effort.	+10	-3
Counter-Intelligence Sweep	4	Defensive operation to block enemy intelligence gathering.	+5	+0
Intelligence Theft	8	Steal target's entire intelligence database.	+40	-20
Plant Disinformation	6	Corrupt target's intelligence with false data.	+15	-15

60.1. 8.2.1 Espionage Mechanics

Espionage actions allow you to disrupt your rivals' operations and gain tactical advantages through covert maneuvers. Below is a detailed overview of each available action, including its effects and thematic narrative.

Espionage Action	Effect
Tech Theft	Steals **10 SRP** from the target's research pool
Low Impact Sabotage	Reduces target's **1d6 Industrial Units (IU)**
High Impact Sabotage	Reduces target's **1d20 Industrial Units (IU)**
Assassination	Reduces target's **SRP gain by 50%** for one turn
Economic Disruption	Halves target's **Net Colony Value (NCV)** for one turn
Propaganda Campaign	Reduces target's **tax revenue by 25%** for one turn
Cyber Attack	Cripples the target's **Starbase**
Counter-Intelligence Sweep	Blocks enemy intelligence gathering for **1 turn**
Intelligence Theft	Steals target's **entire intelligence database**
Plant Disinformation	Corrupts target's intel with **20-40% variance for 2 turns**

Tech Theft: In the dead of night, a covert team of elite hackers infiltrates the rival House's research network, siphoning critical data and blueprints. By the time their intrusion is detected, valuable research progress has already been uploaded and integrated into your own laboratories, giving

your scientists a sudden leap forward.

Low Impact Sabotage: A series of small, untraceable explosions ripple through the industrial district of the target colony. Machines grind to a halt, assembly lines are disrupted, and productivity drops. While the damage is minimal, it forces costly repairs and creates a ripple effect of delays across the colony's production schedule.

High Impact Sabotage: Coordinated explosions rock the core industrial facilities of the enemy colony, sending plumes of smoke into the sky. Entire factories are leveled, leaving a twisted wreck of debris and fire. The sabotage is devastating, crippling the enemy's manufacturing capabilities and resulting in the loss of up to **1d20 Industrial Units (IU)**.

Assassination: A shadowy operative slips through the security perimeter and strikes at a key figure in the rival House's R&D division. The death sends shock-waves through their research teams, causing chaos and demoralizing the scientists. The pace of research slows to a crawl as panic and distrust spread among the staff.

Economic Disruption: Anonymous agents spread false rumors of an impending financial collapse, triggering a panic among investors and merchants in the enemy colony. Markets plunge, trade grinds to a halt, and the local economy falters. Revenues drop sharply as the effects of the disruption ripple through the entire colony's financial system.

Propaganda Campaign: A coordinated propaganda blitz floods the rival House's communications networks with fake news and altered footage, painting their leadership as corrupt and ineffective. Citizens begin to protest, refusing to pay full taxes as public confidence crumbles. The unrest leaves the enemy Duke struggling to maintain control, with lower revenues compounding their problems.

Cyber Attack: A powerful virus infiltrates the core systems of the enemy's Starbase, shutting down its defenses and key operational modules. The Starbase is left crippled, its functions severely impaired until extensive repairs are completed. The colony's defensive posture and economic output suffer a significant blow, leaving it vulnerable to further attacks.

60.2. 8.2.2 Intelligence Warfare Actions

EC4X introduces three specialized espionage actions focused on information warfare, bringing the total to **10 espionage actions**. These operations target enemy intelligence gathering capabilities rather than physical assets.

Counter-Intelligence Sweep (4 EBP): Your security forces conduct a comprehensive sweep of all intelligence operations, communications networks, and data channels. Hidden surveillance equipment is discovered and destroyed, compromised personnel are identified and removed, and security protocols are hardened against enemy infiltration. For one turn, enemy intelligence gathering attempts are blocked - scout reports fail to transmit, spy operations are detected before completion, and surveillance networks go dark. This defensive operation provides critical protection during sensitive military operations or when preparing surprise attacks.

Intelligence Theft (8 EBP): A masterful cyber-espionage operation penetrates the target House's most secure intelligence archives. Over the course of hours, massive data transfers siphon their entire intelligence database - scout reports, spy assessments, fleet movement tracking, economic

analyses, and strategic evaluations. When complete, you possess a perfect copy of everything they know about the galaxy, including their intelligence on your own forces and those of other houses. This high-value operation can reveal enemy strategic intentions, planned offensives, and alliance negotiations. The theft may go undetected for turns, giving you time to exploit the stolen intelligence before counter-measures are implemented.

Plant Disinformation (6 EBP): Your intelligence operatives conduct a sophisticated disinformation campaign, subtly corrupting the target House's intelligence gathering systems. False data is injected into scout telemetry, spy reports are altered with fabricated statistics, and sensor networks are fed phantom readings. The corruption is designed to appear legitimate - fleet strengths are inflated or deflated by 20-40%, colony statistics are randomized, economic data is distorted, and tech levels are misreported. The disinformation persists for 2 turns, during which all enemy intelligence reports (scouts, spies, visual encounters) contain corrupted data. Strategic decisions made on false intelligence can lead to disastrous military miscalculations, wasted resources, and failed offensives. The beauty of disinformation is that the enemy doesn't know their intelligence is compromised until they act on false data.

Strategic Implications:

Intelligence warfare creates a meta-game layer where information itself becomes a weapon:

- **Counter-Intelligence Sweep** is defensive, protecting your operations during critical turns
- **Intelligence Theft** provides one-time strategic insight into enemy knowledge and intentions
- **Plant Disinformation** is offensive, degrading enemy decision-making for multiple turns

Houses must balance offensive espionage (sabotage, assassination) with intelligence warfare. A well-timed disinformation campaign can cause more damage than physical sabotage by poisoning enemy strategic planning. Intelligence Theft can reveal enemy war plans, allowing preemptive counter-measures. Counter-Intelligence Sweeps protect your most sensitive operations from enemy surveillance.

The interplay between **Intelligence Corruption** (disinformation and dishonor) and **Counter-Intelligence** creates strategic depth. See Section 9.4 for complete intelligence corruption mechanics.

Chapter 61. 8.3 Counter Intelligence Command (CIC)

The mission of the Counter Intelligence Command (CIC) is to safeguard the House's interests by identifying and neutralizing espionage activities from rival Houses. This involves employing advanced surveillance technologies and running counter-espionage operations to ensure the security of House secrets.

CIC Investment:

You can allocate a portion of your turn budget into Counter Intelligence Points (CIP).

- CIP points cost **40 PP each**.
- Each detection attempt (roll) costs **1 CIP point**. If your House has no CIP points, espionage attempts automatically succeed.
- When an espionage event occurs, a **detection modifier** is applied based on your total CIP points.

If you invest more than 5% of your turn budget into CIP, you lose Prestige points.

- Investments > 5% lose 1 Prestige point for each additional 1% invested over 5%.
- Example: If your turn budget is 100 points and you invest 7 points in CIP, you lose 2 Prestige points.

61.1. Detection Modifier:

The modifier is determined based on the total **CIP points** held by the player when an espionage event occurs:

Total CIP Points	Automatic Detection Modifier
0	0 (espionage automatically succeeds)
1-5	+1
6-10	+2
11-15	+3
16-20	+4
21+	+5 (maximum)

61.2. Espionage Detection Table:

CIC Level	Base 1D20 Roll	Detection Probability (with Automatic Modifier)
CIC1	> 15	25% → 30-50%

CIC Level	Base 1D20 Roll	Detection Probability (with Automatic Modifier)
CIC2	> 12	40% → 45-65%
CIC3	> 10	55% → 60-80%
CIC4	> 7	65% → 70-90%
CIC5	> 4	80% → 85-95%

Example:

1. You have **CIC3** and **8 CIP points** when facing an espionage event.
2. The game deducts **1 CIP point** for the detection roll and applies a +2 modifier (based on having 6-10 CIP points).
3. The detection roll threshold for CIC3 is **10**+. With the +2 modifier, the roll only needs to meet or exceed **8**.
4. The roll result is **8**, so the espionage attempt is successfully detected.

Outcome of Successful Detection:

- If the roll (including the modifier) meets or exceeds the required threshold, the espionage action is detected and prevented.
- The attacking player loses **2 prestige points** for the failed attempt.

Chapter 62. 8.4 Risks of Over-Investing in Espionage

While espionage is a powerful tool for undermining rival Houses, over-reliance on covert actions comes with significant risks. In the volatile political landscape of EC4X, the perception of your House can be as important as its actual strength. An overly aggressive espionage strategy can backfire, tarnishing your reputation and eroding the trust of allies, subjects, and even neutral factions. The path to the throne is narrow, and using shadow tactics too liberally can leave a House vulnerable to unforeseen consequences.

62.1. Reputation Damage

A House known for excessive use of espionage becomes synonymous with treachery. Other Houses may become wary of forming alliances or trading agreements, fearing betrayal. This distrust can isolate a House diplomatically, limiting options for cooperation or joint military efforts against common threats.

The citizens of the Empire prize strength, honor, and open warfare over deceit. A Duke who leans too heavily on spies and saboteurs may be seen as weak or dishonorable, risking a loss of public support. This can manifest in reduced prestige, lower tax compliance, and even increased civil unrest across your colonies.

62.2. Diminished Strategic Impact

The more frequently espionage tactics are used, the more likely rivals are to bolster their counter-intelligence efforts. As other Houses ramp up their CIP investments, the effectiveness of your espionage actions diminishes, resulting in wasted resources and fewer successful missions.

Excessive espionage may trigger rival Houses to adopt aggressive countermeasures, such as initiating economic sanctions, launching retaliatory cyber attacks, or coordinating with other players to mount a joint military response. The risks of provoking a coalition against your House increase with every detected espionage action.

62.3. Prestige Penalties

Investing too much in espionage can erode the prestige of your House over time, creating a long-term disadvantage. The aristocracy views shadowy tactics as a sign of desperation rather than strength, leading to the perception that your House is incapable of achieving its goals through legitimate means.

Each turn that espionage investments exceed 5% of your budget, your House loses 2 prestige points for every additional 1% invested over the 5% threshold. This penalty reflects the growing skepticism of your peers and the erosion of your House's noble reputation.

Configuration: `over_invest_espionage = -2` **in config/prestige.toml [penalties] section**

Repeated over-investment in espionage actions compounds the loss of prestige, as the Empire's nobility becomes increasingly suspicious of your methods. Over time, this can severely impact your standing, making it difficult to assert dominance and achieve key diplomatic or military objectives.

62.4. Increased Vulnerability to Espionage

Ironically, focusing heavily on offensive espionage often means neglecting your own defenses. Houses that pour resources into EBP at the expense of CIP may find themselves exposed to enemy spies, suffering from stolen technologies, sabotage, and propaganda campaigns. A House that gains a reputation for aggressive espionage is likely to attract more counter-espionage efforts from its rivals, creating a dangerous cycle of escalating spy wars.

Rivals who detect your espionage efforts are likely to respond in kind, targeting your colonies with sabotage, tech theft, or even assassination attempts. The cost of countering these actions can quickly exceed the initial benefits of your own espionage investments.

62.5. Finding the Balance

In EC4X, effective use of espionage is about balance. Strategic investments in covert operations can provide decisive advantages, but overextending your reach can be disastrous. Successful Dukes must weigh the immediate gains of espionage against the long-term costs to prestige, diplomatic relations, and overall stability. In the quest for the imperial throne, it is often the House that combines subtlety with strength, and deception with diplomacy, that emerges victorious.

Chapter 63. Reference Tables

Chapter 64. 10.0 Data Tables

Chapter 65. 10.1 Space Force (WEP1)

CST = Minimum CST Level PC = Production Cost MC = Maintenance Cost (% of PC) AS = Attack Strength DS = Defensive Strength CC= Command Cost CR = Command Rating CL = Carry Limit

Class	Name	CST	PC	MC	AS	DS	CC	CR	CL
CT	Corvette	1	20	3%	2	3	1	2	NA
FG	Frigate	1	30	3%	3	4	2	3	NA
DD	Destroyer	1	40	5%	5	6	2	4	NA
CL	Light Cruiser	1	60	3%	8	9	3	6	NA
CA	Heavy Cruiser	2	80	5%	12	13	3	7	NA
BC	Battle Cruiser	3	100	4%	16	18	3	8	NA
BB	Battleship	4	150	4%	20	25	3	10	NA
DN	Dreadnought	5	200	5%	28	30	4	12	NA
SD	Super Dreadnought	6	250	5%	35	40	5	14	NA
PB	Planet-Breaker	10	400	5%	50	20	6	6	NA
CV	Carrier	3	120	3%	5	18	3	8	3
CX	Super Carrier	5	200	5%	8	25	4	10	5
FS	Fighter Squadron	3	20	5%	4	3	NA	NA	NA
RR	Raider	3	150	4%	12	10	2	8	NA
SC	Scout	1	50	2%	1	2	1	NA	NA
SB	Starbase	3	300	5%	45	50	NA	NA	NA

> Ships with a Command Rating (CR) >= 7 are considered Capital Ships.

Chapter 66. 10.1.1 Ship Construction Times

All ship construction completes instantly (1 turn) regardless of hull class or CST tech level.

This reflects the game's time narrative where turns represent variable time periods (1-15 years depending on map size). Multi-turn construction would cause severe balance issues across different map sizes.

CST Tech Effects:

- CST unlocks ship classes (see CST column in Space Force table above)
- CST increases industrial production capacity by 10% per level (affects GCO)
- CST does NOT affect construction time (all ships build in 1 turn)

Hull Class	Ships	Construction Time
All Classes	All Ships	1 turn (instant)

Chapter 67. 10.2 Ground Units (WEP1)

Class	Name	CST	PC	MC	AS	DS
PS	Planetary Shield	5	100	5%	0	100
GB	Ground Batteries	1	20	3%	10	8
AA	Armies	1	15	2%	3	5
MD	Space Marines	1	25	2%	6	6

Chapter 68. 10.3 Spacelift Command (WEP1)

Class	Name	CST	PC	MC	CL	DS
SP	Spaceport	1	100	5%	5	50
SY	Shipyard	1	150	3%	10	70
ET	ETAC	1	25	3%	1	10
TT	Troop Transports	1	30	3%	1	15

Chapter 69. 10.4 Prestige

IMPORTANT: Dynamic Prestige Scaling

All prestige values in this section are **BASE** values. The actual prestige awarded in-game is calculated as:

```
actual_prestige = base_value x dynamic_multiplier
```

The dynamic multiplier is calculated at game start based on map size and player count:

```
systems_per_player = total_systems / num_players
target_turns = baseline_turns + (systems_per_player - baseline_ratio) x
turn_scaling_factor
dynamic_multiplier = base_multiplier x (baseline_turns / target_turns)
```

Small maps (8-10 systems/player) use the baseline multiplier. Larger maps scale DOWN to extend game length:

- **Small maps** (8-10 systems/player): 5.0x multiplier (baseline) → ~30 turn games
- **Medium maps** (15-20 systems/player): 3.0-4.0x multiplier (scaled down) → ~40-50 turn games
- **Large maps** (30+ systems/player): 2.0-2.5x multiplier (scaled down) → ~60-80 turn games

Configuration: config/prestige.toml [dynamic_scaling] section

69.1. Base Prestige Values

Prestige Source	Enum Name	Value
Tech Advancement	`TechAdvancement`	+20
Colony Establishment	`ColonyEstablishment`	+50
System Capture	`SystemCapture`	+100
Diplomatic Pact Formation	`DiplomaticPact`	+50
Pact Violation (penalty)	`PactViolation`	-100
Repeat Violation (penalty)	`RepeatViolation`	-100
Attack Dishonored House	`DishonoredBonus`	+10
Tech Theft Success	`TechTheftSuccess`	+20
Tech Theft Detected (penalty)	`TechTheftDetected`	+20
Assassination Success	`AssassinationSuccess`	+50
Assassination Detected (penalty)	`AssassinationDetected`	+50

Prestige Source	Enum Name	Value
Espionage Attempt Failed (penalty)	`EspionageFailure`	+10
Major Ship Destroyed (per ship)	`ShipDestroyed`	+10
Starbase Destroyed	`StarbaseDestroyed`	+50
Fleet Victory (per battle)	`FleetVictory`	+30
Planet Conquered	`PlanetConquered`	+100
House Eliminated	`HouseEliminated`	+30
Victory Achieved	`VictoryAchieved`	+50

69.2. Prestige Penalty Mechanics

Penalty mechanics describe how prestige is deducted based on player actions and game state. Unlike prestige sources (discrete events in Table 9.4), these are recurring penalties triggered by conditions.

Penalty Type	Condition	Prestige Impact	Frequency	Config Keys
High Tax Rate	Rolling 6-turn avg 51-65%	-2 prestige	Every 3 consecutive turns	`high_tax_*`
Very High Tax Rate	Rolling 6-turn avg >66%	-2 prestige	Every 5 consecutive turns	`very_high_tax_*`
Maintenance Shortfall	Missed maintenance payment	-8 turn 1, escalates by -3/turn	Per turn missed	`maintenance_shortfall_*`
Blockade	Colony under blockade at Income Phase	-3 prestige	Per turn per colony	`blockade_penalty`
Espionage Over-Investment	EBP spending >5% of budget	-2 prestige per 1% over threshold	Per turn	`over_invest_espionage`
Counter-Intel Over-Investment	CIP spending >5% of budget	-2 prestige per 1% over threshold	Per turn	`over_invest_counter_intel`

Additional Notes:

- Tax penalties apply periodically based on rolling 6-turn average, not instantaneously
- Maintenance shortfall escalates: Turn 1 (-5), Turn 2 (-7), Turn 3 (-9), continues +2/turn
- See Section 3.1.3 for full tax mechanics
- See Section 3.2 for maintenance mechanics

Chapter 70. 10.5 Game Limits Summary (Anti-Spam / Anti-Cheese Caps)

Limit Description	Rule Details	Source Section
Capital Squadrons (per house)	Maximum = Total House (IU ÷ 100)*2 (round down, minimum 8). Squadrons commanded by flagships with CR > 7. Every squadron costs 1 slot.	3.12
Planet-Breakers (per colony)	Maximum 1 per currently owned colony (homeworld counts). Loss of colony instantly scraps its PB (no salvage).	2.4.8
Fighter Squadrons (per colony)	Max FS = floor(Colony IU ÷ 100) × Fighter Doctrine multiplier (FD I = 1.0×, FD II = 1.5×, FD III = 2.0×). Based on industrial capacity, not population. 2-turn grace on capacity violation → auto-disband excess.	2.4.1
Carrier Hangar Capacity	CV = 3–5 FS, CX = 5–8 FS depending on Advanced Carrier Operations (ACO) tech level (house-wide instant upgrade). Hard physical limit.	2.4.1
Scout CER Bonus	Maximum +1 total to CER for the entire Task Force, regardless of number of scouts present.	7.3.3
Squadron Destruction Protection (anti-fodder)	A squadron may not be destroyed in the same combat round it is crippled. Excess hits that would destroy a freshly crippled squadron are lost (critical hits bypass).	7.3.3
Blockade Prestige Penalty	See Prestige Penalty Mechanics for blockade penalty details.	6.2.6
Tax Rate Prestige Penalty	See Prestige Penalty Mechanics for tax rate penalty details.	3.2

Chapter 71. 11.0 Glossary & Definitions

Chapter 72. Ship Classes

72.1. Capital Ships

Term	Definition	Section Link
BB	Battleship – heavy capital ship	9.1
BC	Battle Cruiser – medium-heavy capital ship	9.1
CA	Heavy Cruiser – medium capital ship	9.1
CL	Light Cruiser – light capital ship	9.1
CT	Corvette – smallest capital ship	9.1
DD	Destroyer – small capital ship	9.1
DN	Dreadnought – very heavy capital ship	9.1
FG	Frigate – small escort ship	9.1
SD	Super Dreadnought – largest standard capital ship	9.1

72.2. Carriers & Fighters

Term	Definition	Section Link
CV	Carrier – medium carrier that holds 3-5 FS	9.1
CX	Super Carrier – heavy carrier that holds 5-8 FS	9.1
FS	Fighter Squadron	2.4.1

72.3. Special Ships

Term	Definition	Section Link
PB	Planet-Breaker – massive siege weapon for orbital bombardment	2.4.8
RR	Raider – cloaked stealth attack ship	2.4.3
SB	Starbase – immobile orbital fortress	2.4.4

Term	Definition	Section Link
SC	Scout – stealth reconnaissance ship	2.4.2

Chapter 73. Ground Forces

Term	Definition	Section Link
AA	Armies – basic ground defense unit	9.2
GB	Ground Batteries – orbital defense unit	9.2
MD	Marine Division (Space Marines) – elite ground invasion unit	9.2
PS	Planetary Shield – ultimate ground defense structure	9.2

Chapter 74. Spacelift & Infrastructure

Term	Definition	Section Link
ET	ETAC – Environmental Transformation And Colonization ship	9.3
SP	Spaceport – facility for population/cargo transport	9.3
SY	Shipyard – facility for ship construction	9.3
TT	Troop Transports – ship for moving ground forces	9.3

Chapter 75. Ship & Unit Statistics

Term	Definition	Section Link
AS	Attack Strength – offensive firepower of a ship or squadron	7.3
CC	Command Cost – the "size" a ship takes in a squadron	9.1
CER	Combat Effectiveness Rating – multiplier applied to AS in Phases 1 & 3	7.3.3
CL	Carry Limit – number of FS (fighters) or MD/PTU a carrier/transport holds	9.1
CR	Command Rating – maximum total CC a flagship can command	9.1
DS	Defense Strength – hits required to cripple or destroy a unit	7.3
MC	Maintenance Cost – upkeep cost as percentage of PC	9.1
PC	Production Cost – build cost in PP	9.1

Chapter 76. Economy & Production

Term	Definition	Section Link
Colony	Player-controlled planetary settlement with population, production, and defenses	2.2
Deficit	Financial shortfall triggering forced fleet disbanding and infrastructure stripping	3.11
GCO	Gross Colony Output – raw production before tax	3.1
GHO	Gross House Output – total PP produced by all colonies before tax	3.1
Homeworld	Player's original starting colony; capital system; never voluntarily abandoned	2.2
IU	Industrial Units – production facilities on a colony	3.5
Maintenance	Recurring costs paid each turn for ships, units, and facilities	3.9
NCV	Net Colony Value – net tax revenue collected: GCO × tax rate	3.3
PP	Production Points – currency of the game	3.0
Prestige	Ultimate measure of House dominance; reaching zero triggers elimination	1.1
PTU	Population Transfer Unit – colonists moved by ETAC	2.3
PU	Population Units – inhabitants of a colony; basis for most limits	2.2
Terraforming	Long-term investment to upgrade planet class and improve conditions	4.7
Treasury	House financial reserves used for construction, research, and expenditures	3.3

Chapter 77. Research & Technology

Term	Definition	Section Link
ACO	Advanced Carrier Operations – tech that increases carrier hangar capacity	2.4.1
CLK	Cloaking tech level	2.4.3
CST	Construction tech level – required shipyard level to build a ship class	9.1
EL	Economic Level – entrepreneurial & education advancement (max 10+)	4.2
ELI	Electronic Intelligence – detection tech level	2.4.2
ERP	Economic Research Points – used to advance Economic Level	4.1
FD	Fighter Doctrine tech level – multiplier to per-colony fighter capacity	2.4.1
SL	Science Level – scientific advancement (max 10+)	4.3
SRP	Science Research Points – used to advance Science Level	4.1
TL	Tech Level – generic technology level (context dependent)	4.0
TRP	Technology Research Points – used to purchase specific technologies	4.1
WEP	Weapons Level – determines available ship classes and upgrades	9.1

Chapter 78. Combat & Military Operations

Term	Definition	Section Link
Ambush	Surprise attack where undetected Raiders strike first (+4 CER modifier)	7.3.1.1
Blitz	Fast Marine infiltration of planet; requires 2:1 superiority; less damage than invasion	6.2.9
Blockade	Fleet operation that reduces colony GCO by 60% and imposes -2 prestige penalty	6.2.6
Bombardment	Orbital attack on planet's defensive assets and infrastructure	6.2.7
Cloaking	Stealth technology allowing Raiders to avoid detection; countered by ELI	7.1.3
Colonization	Landing an ETAC to establish a new colony on unoccupied planet	6.2.13
Critical Hit	Natural 9 on CER roll; bypasses destruction protection and awards prestige	7.3.3
Crippled	Combat state where unit's AS is halved; requires DS hits to achieve	7.1.2
Destroyed	Final combat state where unit is dead and unrecoverable	7.1.2
Fleet	Grouping of squadrons for strategic movement through jump lanes	2.3.4
Flagship	Capital ship commanding a squadron; determines max capacity via CR	2.3.3
Invasion	Three-round battle to conquer planet: batteries, population, then Marines	6.2.8
Morale	Crew effectiveness based on prestige; affects CER rolls and combat behavior	7.1.4

Term	Definition	Section Link
Patrol	Fleet operation to actively engage hostiles entering a system	6.2.4
Retreat	Combat disengagement after first round; falls back to friendly system	7.3.5
Salvage	Disband fleet at colony for 50% of ships' PC value	6.2.16
Squadron	Organized group of ships under flagship command; fights as single unit	2.3.3
Task Force	Temporary merger of all fleets + starbase during combat	7.2

Chapter 79. Diplomacy & Intelligence

Term	Definition	Section Link
CIP	Counter-Intelligence Point – defense against espionage; costs 40 PP each	8.3
Detection	Process of discovering espionage attempts or cloaked Raiders via dice rolls	8.3
Diplomatic Isolation	Cannot establish new NAPs for 5 turns after pact violation	8.1.2
Dishonored	Reputation penalty lasting 3 turns after NAP violation	8.1.2
EBP	Espionage Budget Point – cost 40 PP each; used for covert actions	8.2
Enemy	Diplomatic status commanding fleets to engage at every opportunity	8.1.3
Espionage	Covert operations including tech theft, sabotage, assassination, and psyops	8.2
Fog of War	Restricted visibility requiring active intelligence gathering to see rivals	1.5.2
NAP	Non-Aggression Pact – agreement to not attack each other	8.1.2
Neutral	Diplomatic status where fleets avoid hostilities outside controlled territory	8.1.1
ROE	Rules of Engagement – aggression level 00–10	7.1.1
Territorial Control	System ownership determined by presence of colony	8.1.5

Chapter 80. Game Phases & Turn Structure

Term	Definition	Section Link
Command Phase	Third phase: issue fleet orders, diplomatic changes, construction orders	1.3.3
Conflict Phase	First phase: resolve all military actions, combat, bombardment, invasion	1.3.1
Income Phase	Second phase: recalculate economics, update prestige, grow population	1.3.2
Maintenance Phase	Fourth phase: pay upkeep, complete repairs, process construction	1.3.4

Chapter 81. Special Mechanics & Status

Term	Definition	Section Link
Autopilot	Temporary MIA mode when player misses 3 turns; defensive operations only	1.4.2
Capacity Violation	When fighter squadrons exceed limits; 2-turn grace or disbanded	2.4.1
Defensive Collapse	Elimination when prestige ≤ 0 for 3 consecutive turns	1.4.1
Jump Lanes	Hex interconnections with three classes: restricted, minor, major	6.1
Research Breakthrough	Bi-annual technological leap (10% base chance + RP investment bonus)	4.1.1