Intro

THE COMMODORE ROADMAP

Definitive New Player Learning Guide on NEBULOUS : FLEET COMMAND.

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Intro

This guide is intended as a framework of learning the mechanics of Nebulous : Fleet Command. This is a complex game with many interlocking mechanics, however, I believe that it is possible to break down this intricate game into simple, easier to understand concepts for the average RTS player, such that a new player won't feel overwhelmed. At the same time, Nebulous is a complex game that diverges quite far from your average RTS, as such I'll be going over from the absolute basics and explaining as much as the in game terminologies and mechanics as I am humanely able to.

Nebulous is not a true simulation, unlike what many may consider. While many aspects of it are close to life, they are also significantly abstracted and simplified so that an average RTS player, with time and effort, can learn the mechanics, all while fitting into the framework of a 30-50 minute battle. Think of this game as something like War Thunder Realistic Battles, Cold Waters, or Squad, instead of DCS or ArmA.

This guide assumes that you have some similarity to other, non 3-Dimensional RTS games and video games in general and have gone through or are going through the basic tutorial of the game. Feel free to refer to this guide and learn it bit by bit in your long journey to master this game. Whether you are a Midshipman, or a seasoned Commodore, See you in the void!

Basic Mechanics

1.  Basics of Fleet Command

- **Game concept**
  - Nebulous Fleet Command is a Real Time Tactics game where you control detailed space warships in tactical combat in a 3D environment. There's no resource gathering here, instead you focus on what you have, gather intelligence by using a detailed sensor system, utilize the 3D environment to move your ships into strategic positions, and manage your ever dwindling amount of munitions, hull integrity, and time to accomplish your objectives and achieve victory.

- **Camera movement**
  - WASD to move camera horizontally, Q and C to move camera vertically, scroll wheel to zoom camera.
  - Left click and drag to rotate the camera around.
  - **Adjust Field of View and UI size in options, adjust colorblind in options if needed.**

- **User Interface**

  - **TOP LEFT :**
    - Unit List & Status + Control Groups
      - Shows a concise indication of your ships.
  - **BOTTOM RIGHT :**
    - Damage Status Panel & Info
      - Shows selected ship's condition.
  - **BOTTOM MIDDLE :**
    - Postures / Posture Panel
      - Shows your ship's list of Postures, a set of predictable behaviours of the ship during battle that can be changed.
    - Orders Panel
      - Shows any currently ongoing orders of the ship, like attack orders.
  - **BOTTOM LEFT :**
    - Mounts Panel
      - Shows status & readiness of mounts, such as weapons, jammers, and Point Defenses.

- **Unit selection**
  - Left click or tap unit key (1-10)

- Press F to focus on a unit that’s currently selected, double tap control group (1-10) to focus & select a unit at the same time.
- Selected ship will display the unit’s Postures, damage, and mount panels, on the bottom of the screen.

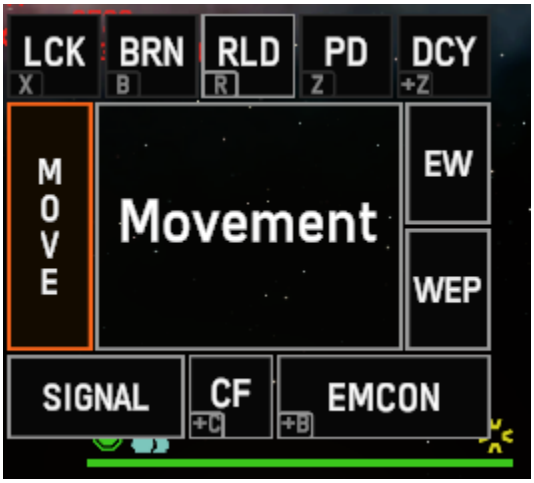
- In Nebulous Fleet Command, you control a maximum of 10 ships, no more. They are automatically assigned a control group (1-10)

- **Objectives**
  - Single player objectives are similar to what you might expect in other RTS games.
  - Capture Points are what you'll be fighting over most of the time in multiplayer and skirmishes.

- **Basic commands**
  - Move in one plane / 2D & Fire on a track, similar to normal RTS.
  - In Nebulous, the left mouse button is used to issue commands based on context and selected orders. Instead of right clicking to issue commands like in other RTS, Right clicking is instead used to bring up the Action Panel box.

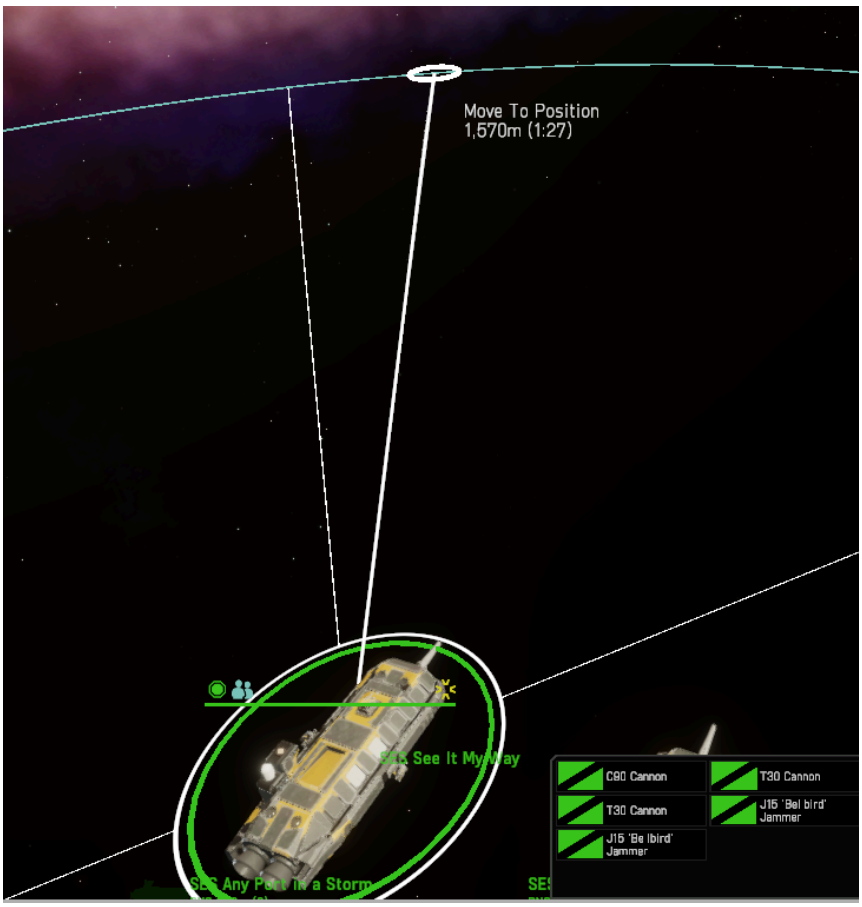
- Unlike other RTS games, there’s no lasso box selection in Nebulous, left click and dragging rotates the camera instead.
- **Basic Command flow (Move) :**
  - **Left click or tap control group key to select unit**

  - **Right click to open Action Panel**



- **Left click to select order**

- **Left click to issue order.**



- **Attack Command Flow**
  - To fire on an enemy ship, right click on the enemy ship's track indicator (shown as a red rhombus with a number)

- Then select your weapon groups and left click on your weapon fire group to confirm the attack order using that weapon.

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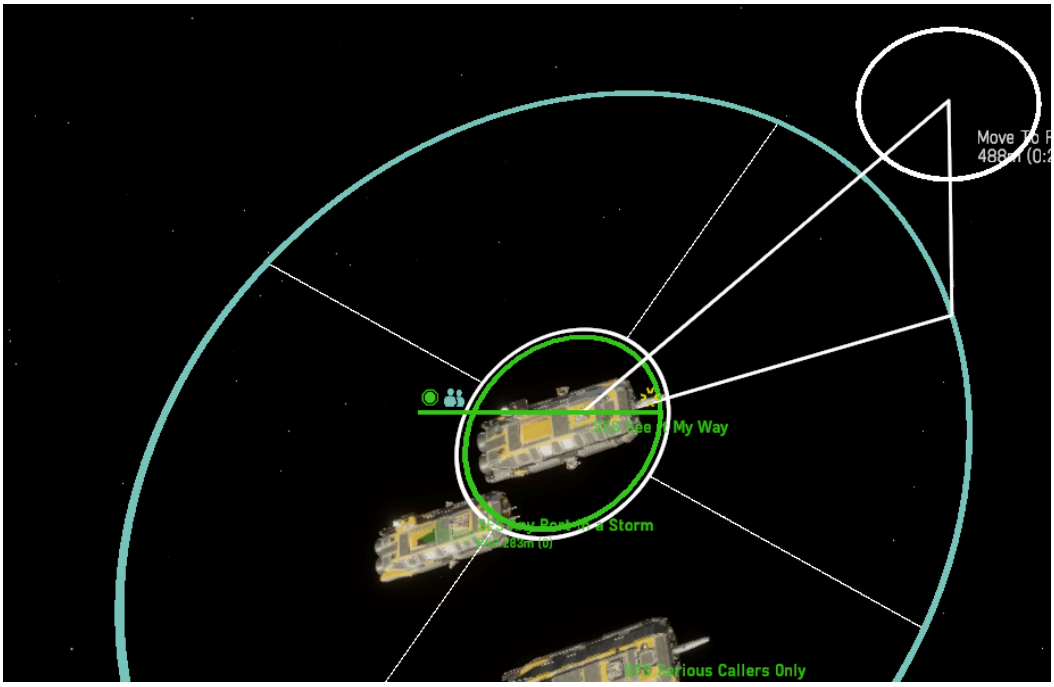
2. Basic Ship Controls

- **Concept of ship thrust, engines and thrusters, acceleration, and movement.**
  - Ships use physical engines and thrusters to generate thrust and accelerate.
  - Acceleration is best forwards, as these are where the main engines are pointing, ships always try to move that way unless told otherwise.
  - Ships have maximum speeds, this depends on the ship hull & drives.

- **Disc Widget**

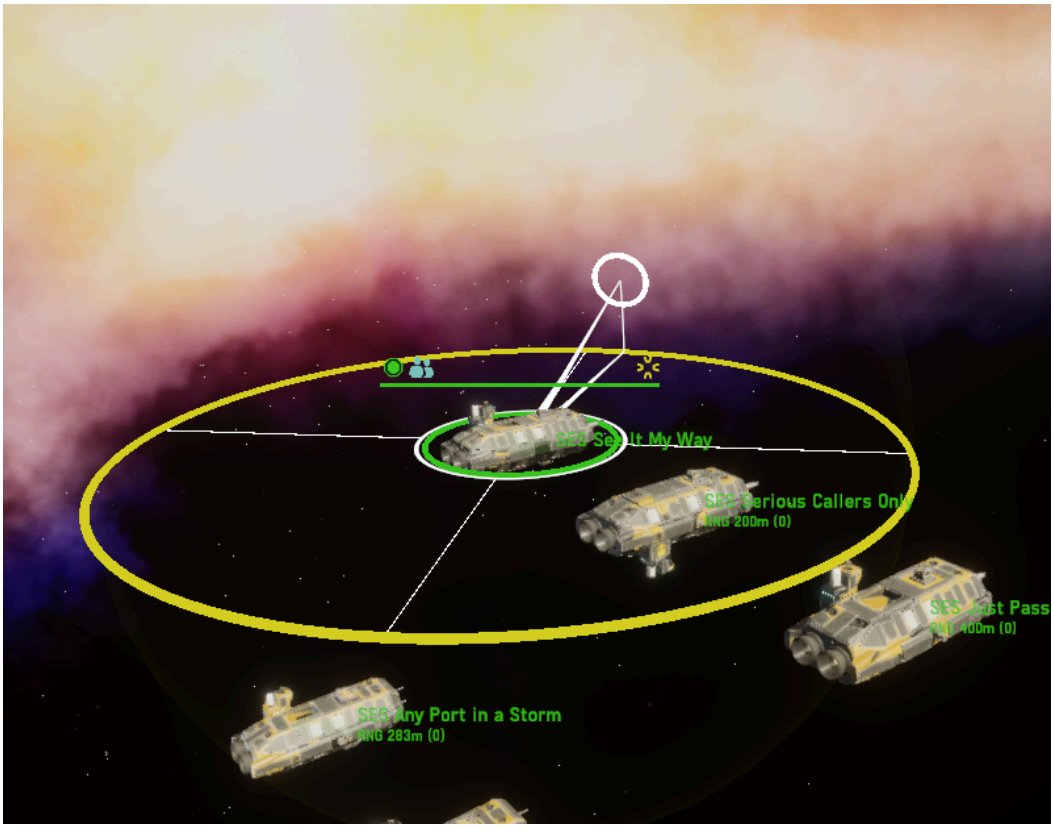


  - Mouse move to adjust range horizontally,

- Control + mouse move to adjust height vertically,
    - While holding Control, your horizontal range position of the disc is preserved.
- Similar to Homeworld, but using left click instead of right click to issue commands.
    - Right clicking will cancel the command and make the widget go away.

- **Beginner Ship Movements (Move in 2 planes / 3D, waypoint move)**
    - Open the Action Panel, select MOVE command, and it will display the disc widget.
    - Shift click for waypoints

- **Sphere Widget**



- Mouse move to adjust direction in a sphere
- Pay attention to the solid lines projected to the disc to see where you are pointing the widget to.

- If you are still disoriented, consider adjusting the option to exaggerate the widget perspective in the options.
- Control + mouse move to adjust distance, note distance adjustment for heading is only for clarity of the widget, no actual ship movement

- **Heading Commands Basics**

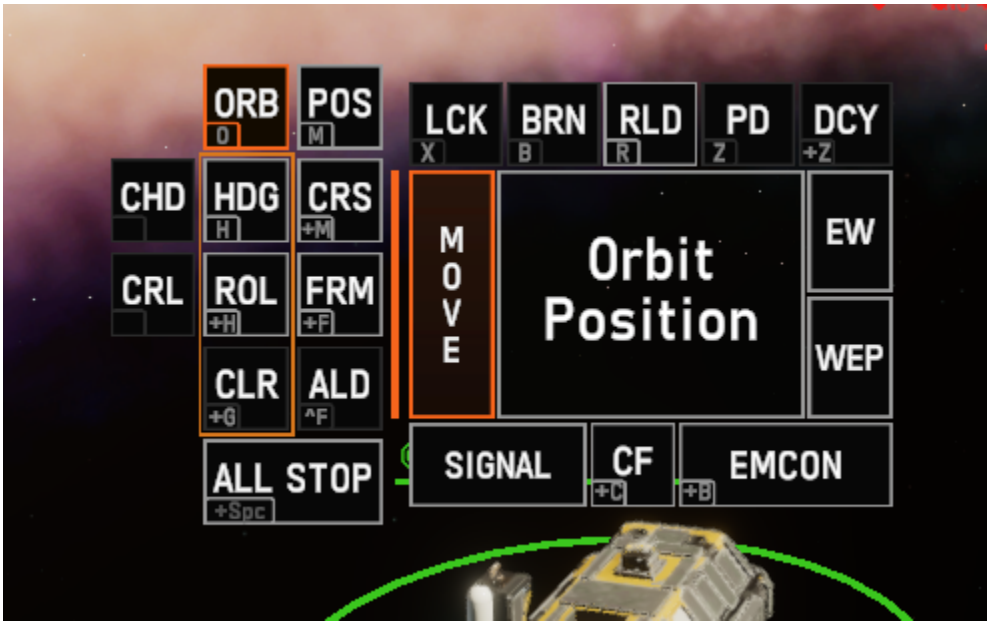
- Open the Action Panel, select HDG command, and it will display the sphere widget.
- Face a desired direction using the sphere widget
- Heading orders persists through move orders until cancelled.

- **Heading to Target**

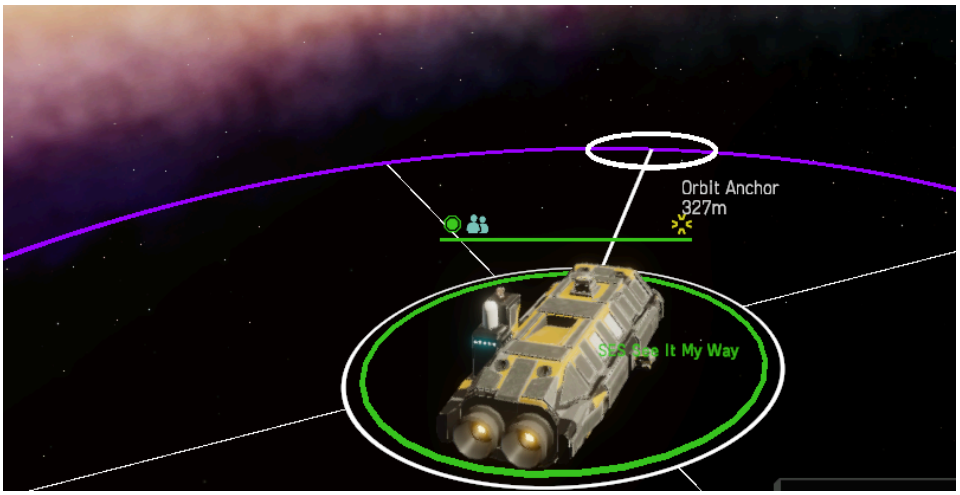
- Face a targeted track.
- Right click on a track.
    - A track is a red square or rhombus with a number next to it. We will learn more about it later.
- This order is only available if you are selecting a track.
- Persists through move orders until cancelled or track is lost

- ***This also demonstrates that right clicking to bring up the Action panel is contextual, it will show different commands depending if you are right clicking empty space, or a track.***

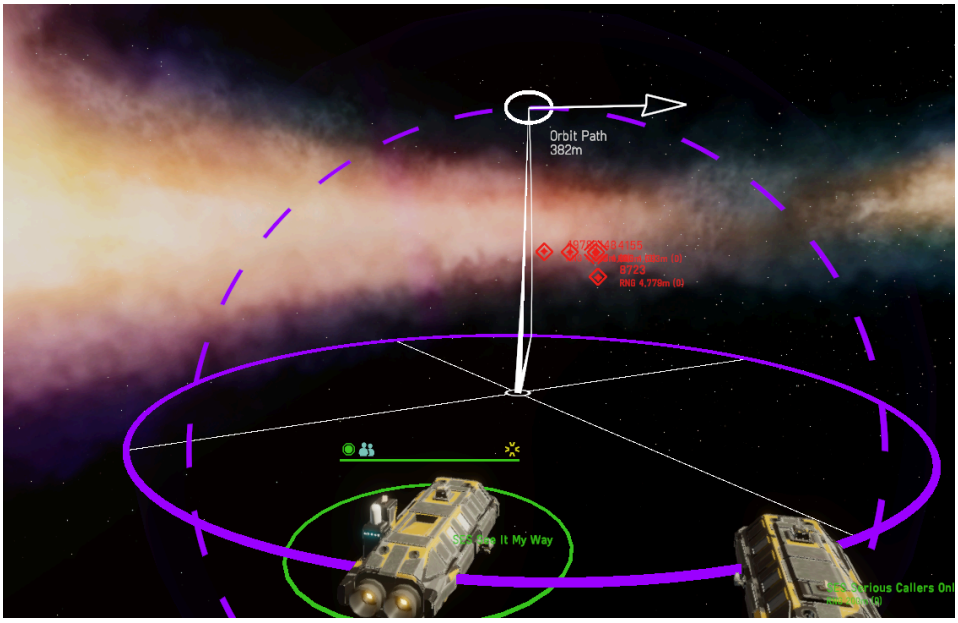
- **Orbit command basics**



  - Open the Action Panel, select MOVE then ORB



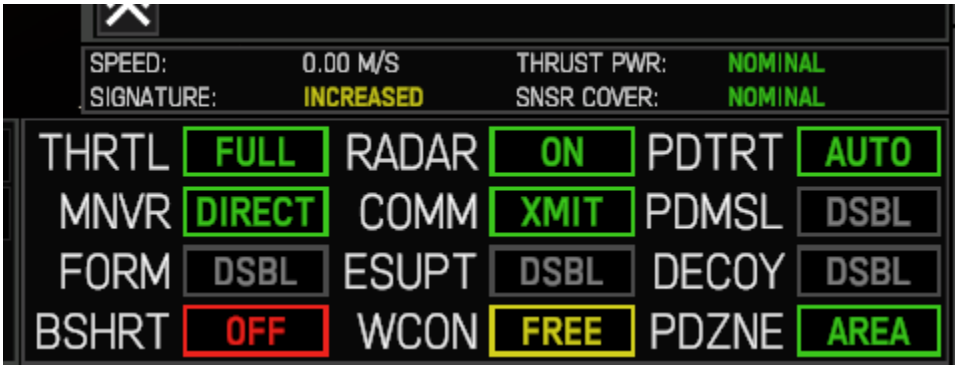
  - Set a pivot / anchor point for the orbit using the disc widget.



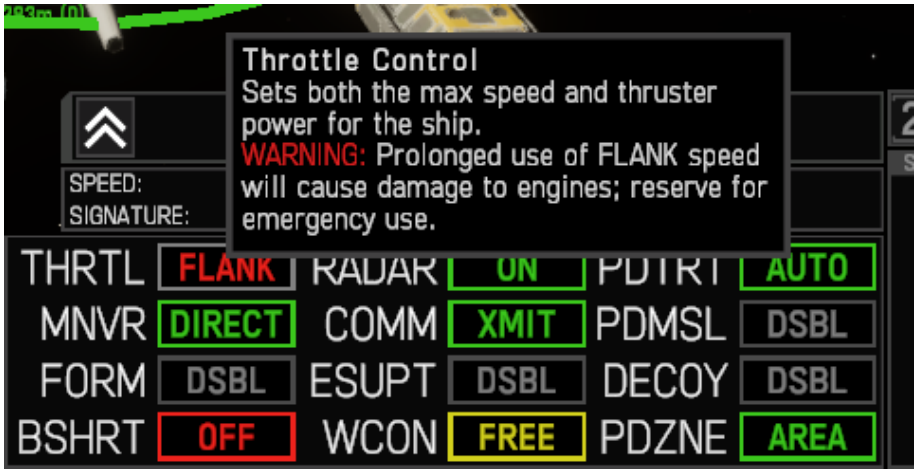
- Then, set the orbit path and distance.
  - Mouse movement will set the angle of the orbit in relation to the pivot point.
  - Holding Control will allow you to set the radius of the orbit path.
- Ship moves to the indicated orbit pivot point, then orbits the selected circular path.

○ Ship Posture Panel concept

- The Postures panel is the panel with abbreviated letters and buttons on the middle bottom of the screen. This panel is where you can set various default behaviours of your ship.



- For now, just pay attention to the **THRTL** (Throttle) button, top left in the panel.



- Adjust THRTL (Throttle) and increase it to FLANK, **FLANK speed will make you move faster, at the cost of your thrusters taking damage over time.**
  (+50% acceleration forwards, +50% top speed in all directions, engines and thrusters gradually take damage)

○ Basic concept of formation

- Formations Allow multiple ships to be controlled together
- Formation speed follows the slowest ship in formation.
- Create a Formation by selecting the FRM command, then designate another ship as the guide ship or lead ship.
  - Then select where your selected ship will position itself in the formation, relative to the lead ship.
- **Ordering the lead ship to move will make the entire formation to move together.**
- **Ordering a member ship to move will cause that ship to leave formation.**

○ Formation setting & Formation move

- 3 settings : REL, TRU, LOOSE
- REL Formation is default for any new formations. It is also the slowest.
- REL formation vs TRU and LOOSE
  - **For new players, set to TRU as a general purpose option. Default REL formation is more of a 'parade'**

formation and slows you down a lot.

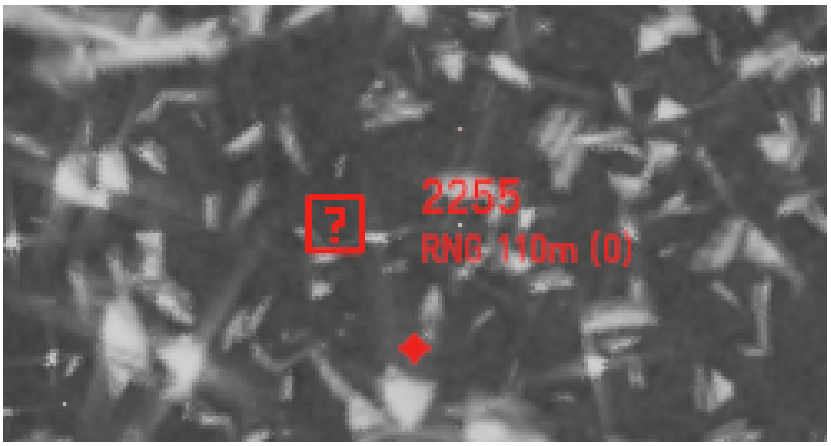
- **Formation Commands (Shift + Right click)**
  - Hold down the Shift key while right clicking to bring up the Action Panel.
  - Notice the (+ X Ships) hint on the middle of the box. This means you're issuing commands to the entire formation.
  - Most often used for fire commands, so the entire formation fires together without having to order ships to fire one by one.

3. Basics of Sensors

- **Concept of Search Radars**
  - Search Radars are a ship's eyes. Ships with no search radars are essentially blind.
  - They come in different types, with different max ranges, output, and track quality.
  - Search Radars require a lot of power. Ships usually have 1 search radar only, as 2 or more will drain too much power.
  - Detected radar contacts are shown as Radar Tracks.

- **Detection of contacts**
  - Smaller contacts (based on their Radar Signature) may need to be closer than the Radar's max range before being detected.

- **Concept of a Radar Track**



  - **<u>A Radar Track is a Representation of a radar contact in your UI.</u>**
    - **Shown as a red box or rhombus with a dot bouncing inside or around it.**
      - Box with ? = unidentified track
      - Rhombus = identified as a ship
  - **<u>Is not perfectly accurate, subject to velocity and positional error, represented by the small dot bouncing about</u>.**
    - **What are Velocity & Positional Errors?**
      - This represents a search radar's imperfections in tracking the target.
      - You can see how accurate a search radar's Velocity & Positional errors stat in the Fleet

Editor.

- A track does not represent how big or small a track's size / signature is
- The number beside the box or rhombus is not just any number, it is a unique code called a Track Number (TN), this can be shared with the team!

  - Type the Track Number on chat. **You can click on it to center your view on said track (provided it is visible).**
  - **Your entire team will see the same track number for the same contact.**
  - T to open Chat. Press TAB to switch it to your team (you don't want to leak information on the All chat!)

- You will only see the RNG (Range) indicator when you are selecting one of your ships. **The RNG indicator is the range of the track to your currently selected ship.**

Concept of Track Quality (TQ)

- Mouse over a Track to reveal more info about it.

- Notice the bracketed letters **[TQ15]**, or Track Quality 15
- TQ Represents how accurate a track is, **it is an aggregation of Positional and Velocity error from the radar.**
- TQ ranges from TQ1 to TQ15, TQ1 means it's a very inaccurate track. TQ15 means it's nearly perfectly accurate.

- No matter how inaccurate a track is, it still represents a radar contact at the vicinity of the track. TQ is instead used when you are firing weapons at it.
- If multiple radars are detecting the same target, the track data with the best TQ is used.

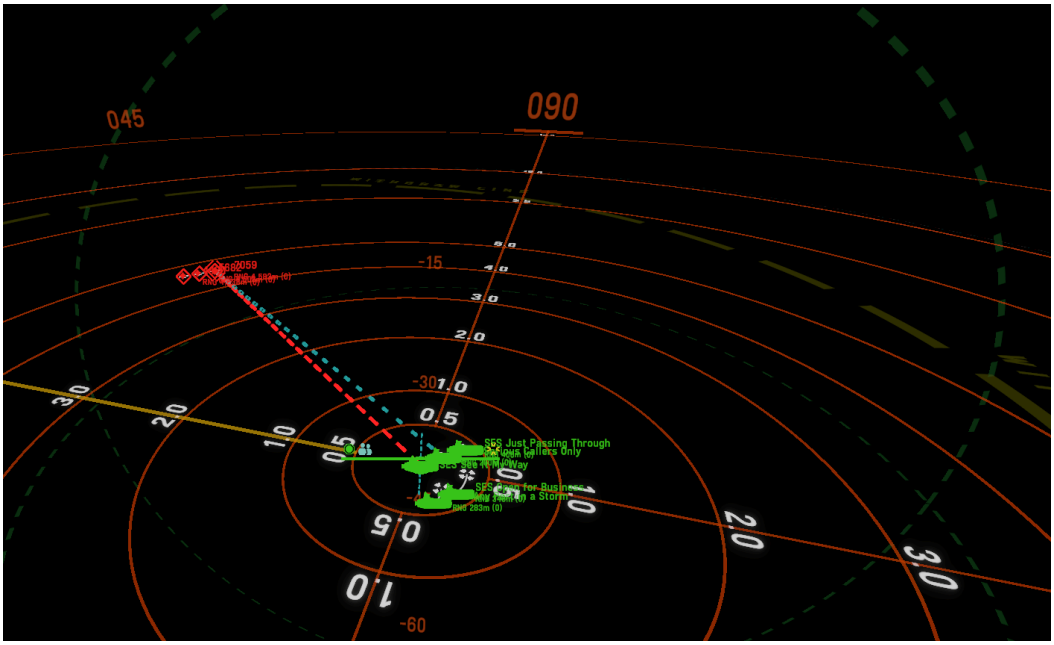
- **Track Quality is important when you want to fire weapons on it.**

○ Fire Control Radar (FCR)

- FCRs can lock on to its max range to gain perfect track quality on a target.
- Press X to lock on to a target quickly.

- Notice the unique solid track indicator that indicates a successful lock on.
- FCRs take up a turret slot / mount.
- Ships with no FCR cannot lock on, but can still fire on locks from other ships.
- **Locked targets ensure maximum accuracy with gunfire and other weapons.**

- **Sensors Manager**



  - **SPACEBAR** to open and close the Sensors Manager.
  - Provides a wider view of the battlefield, allows you to see Ranges of weapons and sensors.
  - Also shows active attack orders, shown as red dotted lines between friendly and enemy ships.
  - Active lock ons are shown as blue dotted lines between friendly & enemy ships.
  - Move orders of your own ships are shown as blue solid lines, while friendly ships have green lines (green line confirmed!)
  - Very similar to Homeworld Sensors Manager, but more detailed.

- **Basic Concept of track sharing**

  - Tracks are shared throughout the entire team, with **no range limitation.**
  - The best tracks or locks available are used across the team.

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4.  Basics of Gunnery

- **Concept of gunnery in Nebulous : Fleet Command**
  - In this game, Shells that are fired from guns are **aimed at a radar track.**
  - ***>> Radar track quality + Gun spread = area where shells can land. <<***
    - Radar Track Quality is affected by the type of radar that's detecting the track.
    - Gun Spread depends on the gun itself, range to target, and any components that buff the gun spread, such as Gun Plotting Centers.
- **Effect of Track Quality on Gunfire Accuracy**
  - difference of TQ, locks are near perfect with no error, maximizing gunfire accuracy
- **Shell Selection**
  - AP shells have superior armor penetration, but deal less damage.
    - They are essentially equal to AP solid shot ammo (if you've played War Thunder)
  - HE shells have less armor penetration, but deal more damage and have an area of effect inside the enemy ship.
    - Note that despite the game saying these are HE shells, they work more like APHE shells in real life (and War Thunder). They penetrate the enemy ship, then fuse & explode inside, instead of HE shells in real life which explode on impact.
  - Small caliber rounds are ineffective against large ships due to lack of damage and penetration.

- Large caliber rounds have limited effect against smaller ships, mainly due to slower muzzle velocity and lack of accuracy, combined with evasive maneuvers.
- Large caliber rounds also have a likelihood of overpenetration on small ships, which cuts a shell's damage by 90% (you know this if you've played War Thunder or World of Warships)

Gun Classes & Ranges

Light Guns (120mm for ANS, 100mm for OSP)

- Rapid firing, Accurate and with a quick muzzle velocity. Effective against light ships such as Clippers, Corvettes, and Frigates.
- Limited effect against medium targets like Destroyers, Light Cruisers, and Line Ships.
- Almost entirely ineffective on its own against heavy ships like Heavy / Command Cruisers, Monitors, and Battleships.

- Can fire dual purpose shells
- Max range of 7.2km.

Medium Guns (250mm)

- Effective against light and medium targets (anything smaller than a Heavy Cruiser)
- Decent rate of fire and accuracy
- Limited effect against heavy targets (anything bigger than a Heavy Cruiser)
- Only the ANS version can fire dual purpose shells (HE-RPF)
- Max range of 8km.

Capital Caliber Guns (450mm)

- Effective against heavy targets. (Heavy Cruisers and above)
- Poor accuracy and rate of fire, with slow muzzle velocity.
- Struggles to reliably hit small ships until medium to close ranges.

        - Often overpenetrates small ships, limiting their effectiveness.
        - Max range of 11.5km

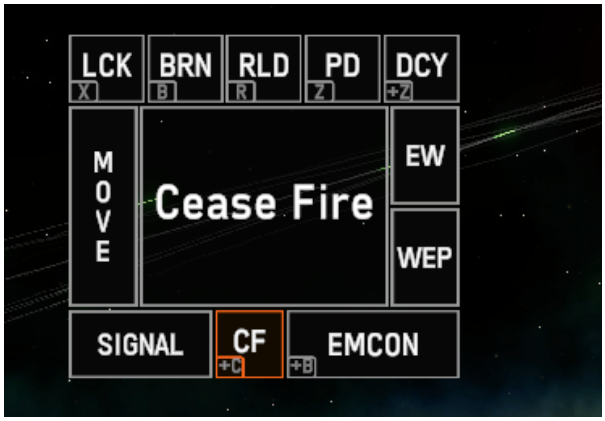
    - **Super Heavy Guns (600mm)**
        - OSP exclusive gun
        - Spinal mounted, very slow to rotate.
        - Slow firing, very slow muzzle velocity, but decent accuracy.
        - Can fire a dual purpose shell to hit smaller targets, even missiles and strike craft (if you can point it at them!).
        - Monstrous damage, and unlike the 450mm gun, is effective against all targets when it hits, as it cannot overpenetrate.
        - Max range of 9.8km

- **Specialist & Dual Purpose Ammunition**
    - HE-RPF (Radio Proximity Fuse) Shells are ANS only, available for their 120mm and 250mm guns, they are useful vs light, evasive targets such as small ships, strike crafts, and missiles.
    - Grapeshot and Flak shells are OSP only for their 100mm guns.
        - Flak shells are useful against strike crafts and missiles, uses a timed fused instead of a proximity fuse like HE-RPF. Also completely ineffective against ships unlike HE-RPF.
        - Grapeshot are better against small ships such as Corvettes and Frigates, but can still target missiles and strikecrafts, albeit unreliably.
    - HE-SH shells are exclusive to the OSP 600mm gun. These rounds deal monstrous damage and are effective against anything it hits, as it explodes on impact, it cannot overpenetrate.
    - Bomb shells are exclusive to the OSP 600mm gun. These fire a massive fragmentation bomb that showers an approximately 500m radius in shrapnel, dealing damage to multiple small targets in an area.

- **When enemy ships are destroyed, Cease Fire.**

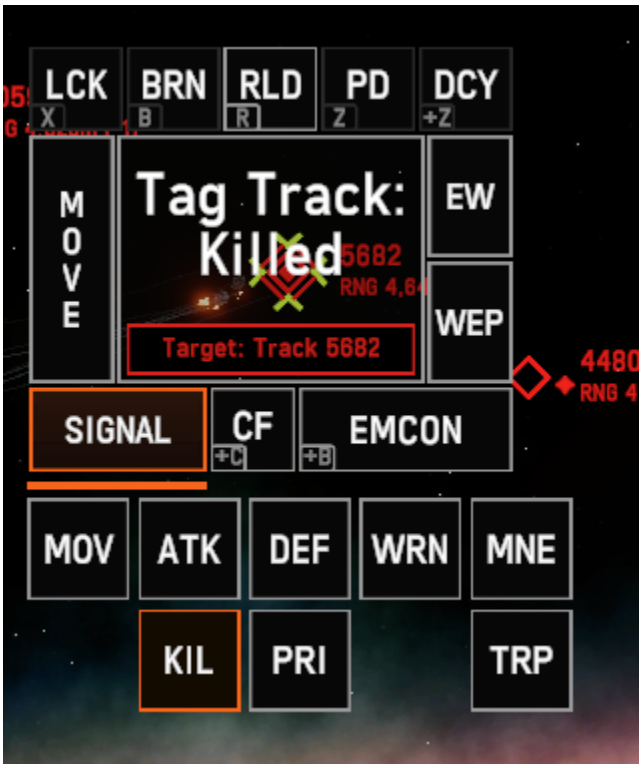
- Destroyed enemy ships will eject Lifeboats, visible on Radar as a small (X) track. (on the left of the picture above)
  - Lifeboats can take some time to identify. If you see additional unknown tracks coming from an enemy ship that you knew took heavy fire, there's a good chance it's an escape pod. Be warned though they might be missiles too!
- **Engaging Lifeboats constitutes a War Crime.**

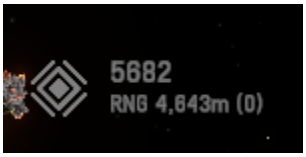
- Ceasing Fire is manual, **your ships won't stop firing unless told to or loses the target.** Press the CF button on the Action Panel



- Mark enemy ships as KIL once destroyed. A KIL marked track appears as a gray track instead of red.
    - Right click on the Track > SIGNAL > KIL
    - You will need to manually mark your own kills in Nebulous. **Confirm kills by looking out for lifeboats coming out of contacts that you have engaged.**
    - Your teammates can also tag tracks.

    - **BE WARNED! You can mark a live ship as KIL, this can give bad information to the team!**

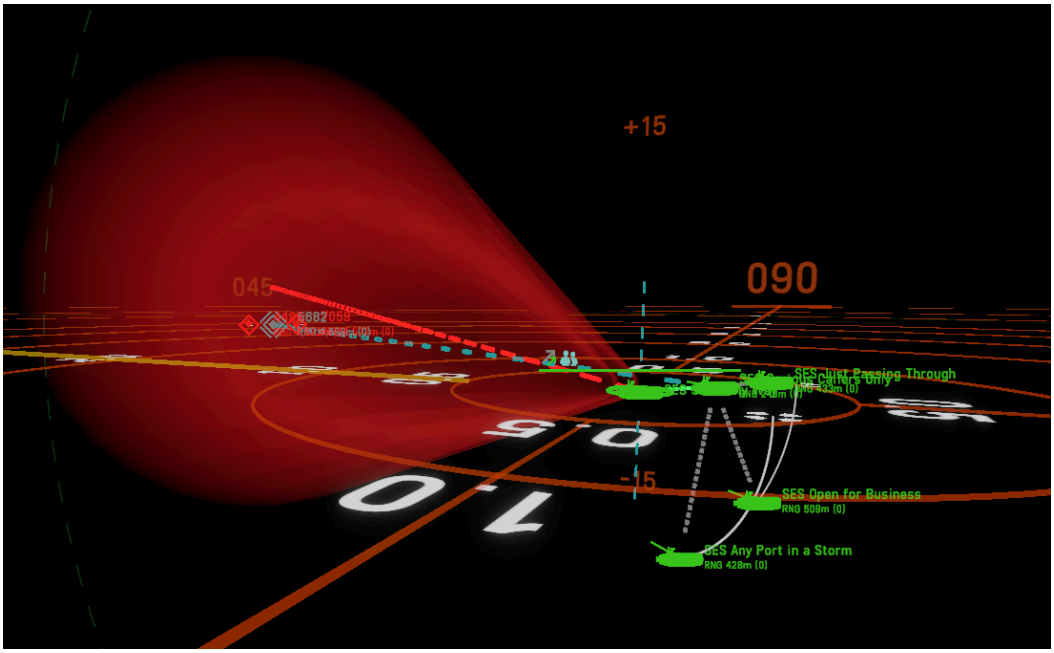




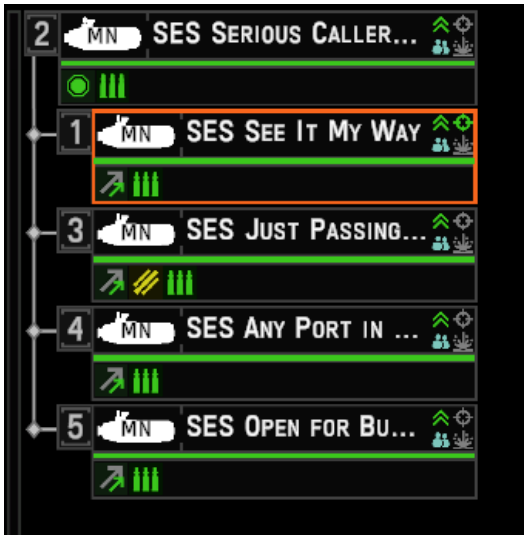
5. Basics of EWAR

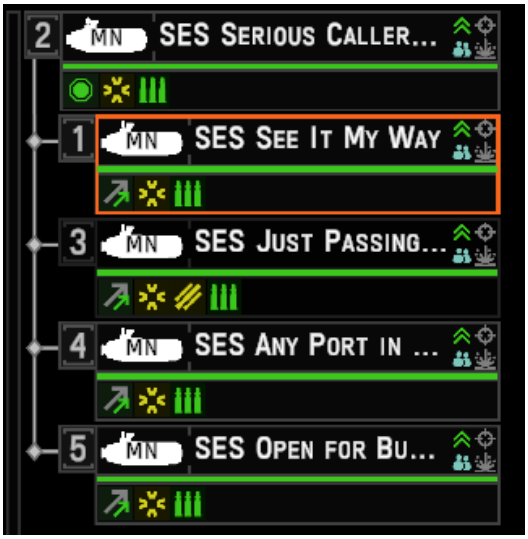
- **Radar Jammer basic concept**
  - Radar Jammers emit overwhelming radio signals to blind enemy radar, use to cover your ship from detection while active as it reduces enemy detection range substantially,
  - Covers a cone shaped arc, direction matters.
  - Has a limited burst time before it needs to cool down.
  - For the ANS, this is called the E90 ‘Blanket’ Jammer (or just Blanket Jammer), for the OSP, it’s called the J15 ‘Bellbird’ Jammer (Bellbird)

- **Using Sensors Manager to see EWAR**



  - EWAR is visible clearly in the Sensors Manager. Radar jamming is represented as a red cone or sphere.
  - In order for an enemy to be jammed, it has to be inside the cone.
  - Radar Jammer has a maximum range of 10km.



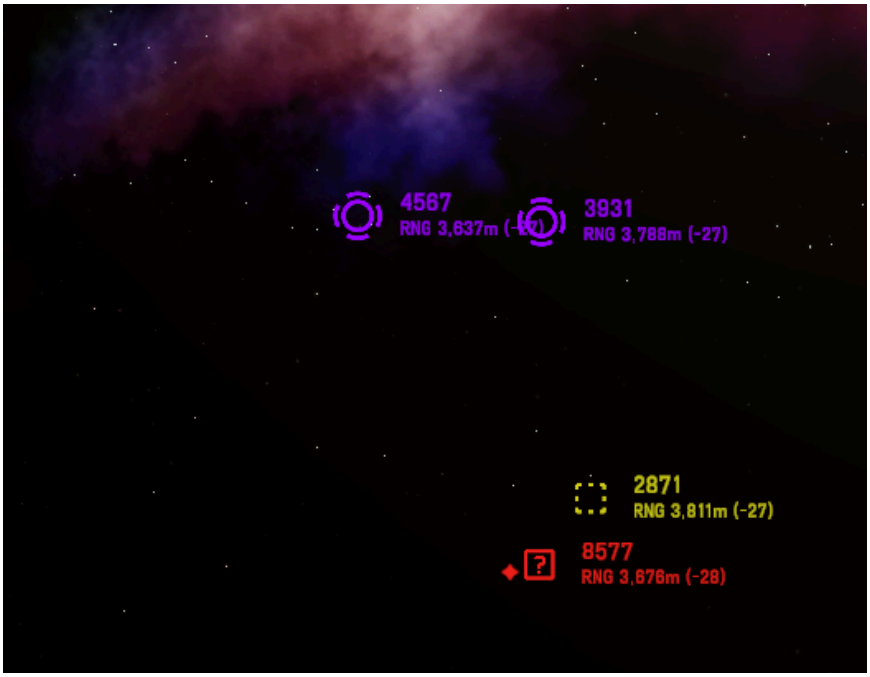


- Notice that when activating jamming, your ships will no longer be detected, as visible on the top left, your ships no longer display the yellow detected icon.

- **Basics of Countering Radar Jamming**

- This is what being jammed looks like, many fake yellow ‘tracks’ that pop in and out. This is purely a visual effect, learn to adapt and not panic.
- Jamming Cone / Line of Bearing (LoB)
    - Used to estimate the rough direction of where the jamming comes from. Appears as a Red (J) dotted circle.

- **Radar Burnthrough Sweep Concept**



- A Burnthrough Sweep (BRN) is a Single pulse / sweep of your Search Radar at the BRN multiplier, this is much stronger than the radar's normal mode of operation, and gives a purple track upon successful detection.
    - Note that unlike a normal radar, Burnthrough is only a single pulse, and does not track a moving target, only a 'snapshot' of its position.
    - Burnthrough is also subject to normal radar positional and velocity error, and unlike a normal track it does not indicate its TQ.
    - Do not use BRN tracks to fire high accuracy attacks like gunfire.

- Note that it won't always work, as sometimes enemy jamming strength may be too strong that even Burnthrough will not suffice, however this is a good first try option if you are jammed,
- Using Burnthrough has a chance to damage your radar, avoid spamming unnecessarily.

        - Not every search radar can burnthrough. Look for the ‘Can Sweep?’ stat on a Radar’s stat card.

    - **Fire Control Radar Lock through jamming**
        - An FCR has much higher output than normal search radar, meaning that it can lock through some jamming.
        - FCR needs an existing track to lock on to, this is where the purple Burnthrough track comes in.

    - **Fail to acquire lock through jamming**
        - Sometimes, jamming may be too strong so that you fail to acquire a lock on the BRN track.
        - In this case you can attempt to get closer before attempting a lock again.
        - Locking doesn’t cause damage to your FCR unlike Burnthrough, feel free to attempt lock on as many times as you need.

    - **Engage track through jamming**

6.  Basics of Ship Survivability

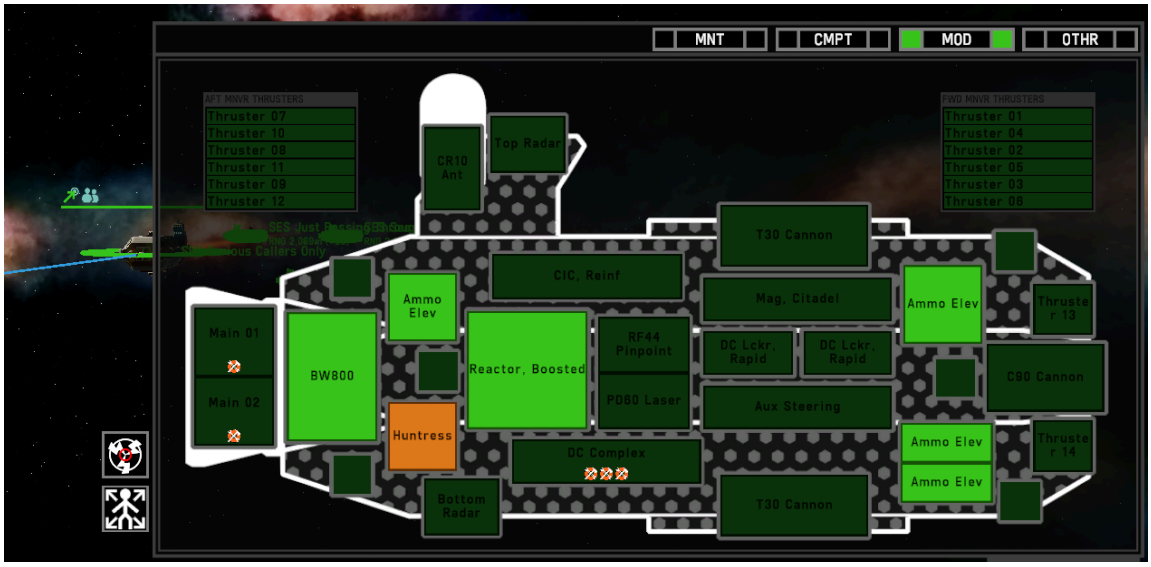
- **Basic Evasive Maneuvers**
    - Use orbit command to move in a tight circle, perpendicular to incoming fire, this helps evade incoming fire and reduce their effectiveness.
    - Use the EVADE MNVR setting in the Postures panel. Less effective in evading than Orbit command, but faster to do, and the ship isn’t locked to an Orbit, meaning you can reposition.

- **Ship Armor concept**
    - Armor covers the entire hull, there are no weak areas, angling matters, ship external mounts are covered by armor

- Shots that do not penetrate armor deal minimal damage, if any.

- **Armor angling & Bow tanking**
  - Use basic heading micro or heading to track to face the target and maximize your armor effectiveness and reduce ship exposure.

- **DC (Damage Control) Board Concept**



  - Click on your ship's view on the bottom right to open the DC board.
  - The DC board is a detailed representation of your ship's internals and DC Teams status

- **Basic component damage system, <u>Hitpoints (HP)</u> and <u>Damage Threshold (DT)</u>**
  - components have HP and Damage threshold (DT)
  - Red (disabled) components can still be repaired, even if at 0 HP.
  - **Red (disabled) components will continue to sustain and block damage for components behind it as long as it is not destroyed. Even if it is at 0 HP.**
  - Damage Threshold (DT) : Amount of damage in one hit needed to fully destroy a component, turning it grey.

        - Grey (destroyed) components can no longer be repaired.

        - For example, a Basic CIC has 250 HP and 25 DT. It takes 10 hits, dealing 25 damage each, resulting in the CIC having 0 HP, but still not destroyed and is able to be repaired. Even if the Basic CIC would continue to take another 100 hits from the same hit that deals 25 damage each, it will never be destroyed, while at the same time protecting whatever is behind the Basic CIC, as the Basic CIC would essentially nullify any damage taken without sustaining any additional health damage. However, if the CIC takes damage from a shot that deals 30 damage, it will be destroyed and no longer protect whatever's behind it, and is no longer able to be repaired.

    - **Damage Resistance (DR)**
        - Damage Resistance is a stat that is tied to the ship itself rather than the component.
        - Almost every ship has a % damage resistance value.
        - Damage Resistance works exactly as it says, it reduces incoming damage taken by a % amount.
        - DR is not affected by the ship taking damage, it will continue to provide its full value.
        - For example, the Axford Heavy Cruiser has a DR value of 40%. A hit that deals 100 damage to it will instead only deal 60 damage.

    - **Basic concept of reinforced components**
        - Reinforced components cannot be destroyed unless it is hit by an attack that exceeds its Damage Threshold (DT) while it has 0HP.

    - **Basic Damage Control (DC) concept**
        - DC teams move physically inside the ship between components and repair HP per second while in a component, they're shown as blue circles with the wrench icon.
        - You can click a component to prioritize it for repairs.

- DC Teams automatically prioritize components based on importance.
    - **As a beginner, there's no need to tell them what to do.**
- DC Teams can be lost due to damage. They can't replenish or be replaced. DC Teams are however pretty resistant to damage.
- A DC team has 5 members, essentially representing a team's 'health'
    - A DC team with 1 member remaining repairs as quickly as a DC team with 5 members.

- Max repair stat, most ships have a base of 10%, **this means that DC teams can only repair from the lowest HP of a component plus 10%.**
    - Some ships, like the Axford and Ocello, have a Max repair bonus, allowing them to repair more damage. The Axford for example can repair from the lowest HP of a component plus 20%, as it has +10% max repair.
    - OSP ships can equip the Damage Control Complex to increase Max Repair.

    - For example, if a component gets hit and is brought to 80% HP, DC teams on most ships can only bring it back up to 90% HP after moving to it and repairing it. However, on the Axford, DC teams can repair it back up to 100% HP, however it will take more time, as the DC teams still repair the same amount of flat HP per second.

- **Component minimum functional threshold.**
    - If a component is brought down below its functional threshold, it's disabled until DC brings it back up to the threshold.
    - DC will always be able to repair the ship's max repair stat + the component minimum functional threshold at the absolute minimum.
    - For example, a Mk66 Cannon has a minimum functional threshold of 30%, given time, DC will **ALWAYS** be able to bring it back up to 40% (or 50% on an Axford due

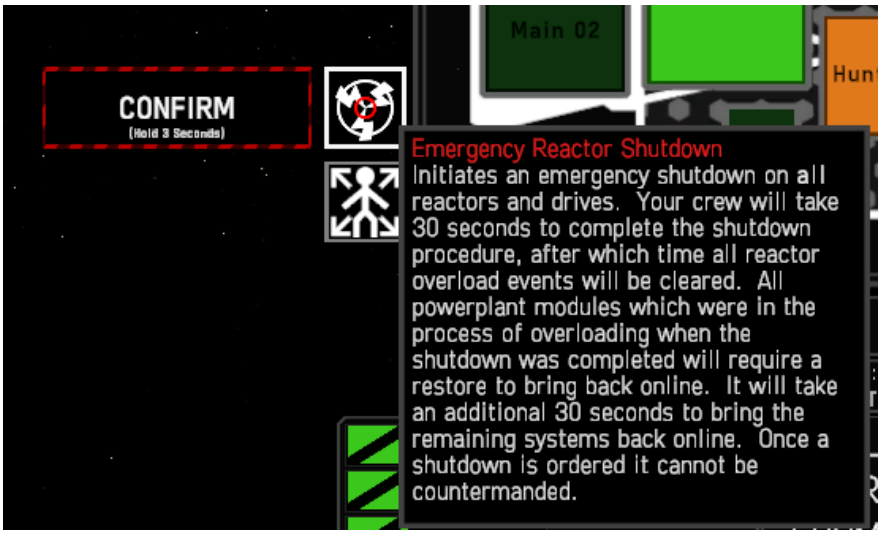
to +10% max repair) regardless if it was brought down to 0% before, as long as it's not destroyed / grey, however it will take much longer as DC teams will have to repair more flat HP

- **Restores**
  - Restores are a limited resource used to bring a destroyed component back into service at the minimum functional threshold.
  - **If a DC locker containing a restore is destroyed, the restore stored inside of it is lost, but can be recovered by restoring the DC Locker.**
  - Shift + Click a destroyed component in the DC board to order it to be restored.
  - **One component restored consumes one restore**, regardless if you restored a Reactor, CIC, or a thruster.
  - Restored components can still be repaired as normal, and can be restored again if destroyed again, so long as restores remain.

- **Crits**
  - Critical effects (Crits) debilitate your ship's performance by reducing certain stats, for example reducing radar accuracy, or your guns' rate of fire. Crits persist until repaired.
  - Multiple crits can happen to a component at the same time.
  - Many types of Crits also reduce your DC team's work speed.
  - DC teams can stack on a component with crits, one team repairs HP, the others repair crits.
  - Components that are destroyed cannot have new crits applied to them, but old crits from before component destruction will still persist.

- **Catastrophic Events**
  - A type of critical that starts a timer. Flashing Warning sign.
  - Must be repaired in time, **or *it will cause heavy damage and/or ship destruction when timer expires*.**

- **DC will automatically put any catastrophic events into their top priority in an attempt to save the ship. As a beginner there's no need to tell them what to do.**
- **There are 3 types of catastrophic events :**
  - **Ammunition / Missile cell cook off:** causes heavy damage around the magazine or VLS cell affected if not put out in time.
  - **Fuel Line fire :** causes heavy damage across your entire ship if not put out in time
  - **Reactor Overload :** causes instant ship loss if not stopped in time, creating a reactor bloom ~1.5km in radius that deals mild damage but will destroy armor on any ship.



- ***Reactor emergency shutdown (Reactor SCRAM / AZ-5)***
  - If a reactor overload is imminent, and you think DC Teams cannot stop it in time, use this. Button is visible on the bottom left of the DC board, above the Abandon Ship button.
  - Hold the button for 3 seconds.
  - Causes any Reactor Overload event to disappear after **30s. Causes any overloading reactor to be destroyed.**
  - **Your ship will lose power AND mobility for the entire 60 seconds of the reactor shutdown and reboot cycle.**

7.  Ship to Ship Warfare demonstration

- **Scenario where the player demonstrates the concepts learned so far, facing off against an enemy fleet utilizing sensor jamming and gunnery, but no missiles or just very basic missile use (track firing like a gun)**

- **<u>Up to this point I highly recommend going over all missions in the basic tutorial set first.</u>**

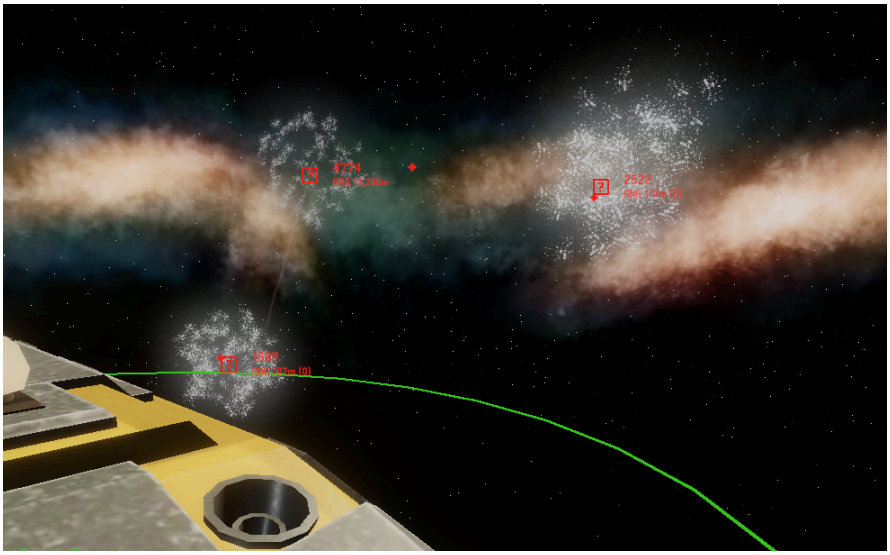
- **The importance of using cover when moving in battle.**
- Focusing on capture points
- Moving with the team.
- USE COVER
- Some single player missions I recommend doing:
  - **Exception to the Rule OSP Campaign mission 1.**
    - *Single ship combat, basic heading, gunnery, and sensors.*
  - **Tutorial Battle Problem (Lesson 7)**
    - *Team movement & communication (confirming kills and marking them), controlling 2 identical ships, basic heading, gunnery, and sensors, basic missile use.*
  - **Exception to the Rule OSP Campaign mission 2 (optional)**
    - *Intermediate application of heading, countering jamming, defeat in detail & tactical movement in the battlespace. Using cover to isolate targets.*

8.  Anti Ship Missile Defense (ASMD)

- For this section, I highly recommend doing the in game Anti Ship Missile Defense Tutorial first:

- **What do you have that can counter missiles?**
  - **Countermeasures**

- **Deployed from VLS-1 mounts (shown above)**
- **Chaff & Flares**



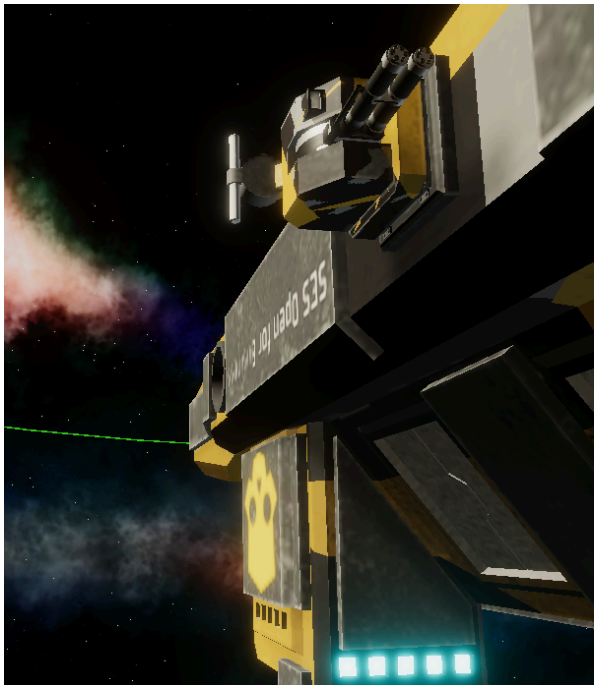
    - Chaff are reflective metal strips that form a cloud upon deployment. These create a false radar contact that can draw incoming missiles.
      i. Chaff lasts 45s before dissipating.
    - Flares provide another heat source that can fool certain missile types.

        - **Chaff is very cheap and can defeat a lot of missile types, expect pretty much any ship to have them.**
        - Flares are also very cheap, but only fool a limited number of missiles, so they’re a lot rarer.

        - **<u>You can manually dump decoys by using Shift + Z (default hotkey)</u>**

    - **EA99 ‘Conure’ Active Decoy**
        - A specialized decoy that mimics a ship’s signature. Can fool a wider range of missiles. Only the ANS has this.
        - This one is deployed from the VLS-2 component instead of the VLS-1

- **Point Defense Turrets (PDTs)**



- Weapons specifically designed to track and shoot down incoming missiles.

        - **Anti Missile Missiles (AMMs)**
            - These are missiles, typically the SGM-100 Balestra variety, fitted with the Blast Frag warhead. These are used to intercept incoming, larger missiles before they hit the ship.
            - AMMs have longer range than PDTs, but is much more limited in quantity, they are typically reserved for large missile strikes that can overwhelm your PDTs alone, or for expensive missiles like Hybrids.

    - **Basic concepts of Softkill and Hardkill.**
        - **Softkill ->** Attempt to spoof the missile's guidance using countermeasures.
        - **Hardkill ->** Shoot the missile down using Point Defenses.

    - **Softkill depends on enemy missile seeker and won't always work.**
        - But it can thin out an incoming salvo and make it easier to stop with Hardkill.

    - **PD Controller Concept**
        - The PD Controller is an **automated system** that manages a ship's Point Defense Targeting and Countermeasure Deployment.
        - Will automatically deploy countermeasures if it deems a missile is threatening the ship.
        - Will automatically task any Point Defense Turrets to target an incoming missile.

        - How do you affect the PD Controller?

- Pay attention to the right most column of the Posture Panel. PDTRT, PDMSL, DECOY, and PDZNE settings can be changed which will alter the behaviour of the PD Controller.

- **PDTRT (PD Turret) → Affects how the PD Controller orders your Point Defense Turrets**
- **PDMSL (PD Missile) → Affects the targeting parameters of your defensive missiles.**
- **DECOY → Affects how the PD Controller will deploy decoys**
- **PDZNE (PD Zone) → Affects how large the area the PD Controller deems an incoming target is a threat**

○ Automated PD measures

- **<u>PD measures that are triggered automatically by the PD Controller.</u>**
- Auto Chaff
  - Deploys Chaff and Flares automatically
- Point Defense Turrets (PDTs)
  - PDTs will turn and target incoming missiles
- Point Defense Missiles (PDMSL)
  - Will fire Point Defense Missiles at incoming missiles according to your PDMSL settings.
- EA99 ‘Conure’ Active Decoy
  - Will drop the active decoy automatically.

○ Defensive jammers / Omni-directional jammers

- Jammer with 360 degree radius and short range, specifically designed to screen against missiles.
  - Creates a sphere of jamming area.
- Has a much longer burst duration compared to directional jammers.
- Unlike the measures directed by the PD Controller, Defensive Jammers require you to manually activate them.

- **Best defense against missiles**
  - Good positioning and cover to limit incoming threat vectors (where threats can come from) and to deter missile threats, combined with adequate hardkill and softkill defenses.
  - Grouping together with other fleets from teammates increases the effective coverage and firepower of Point Defenses
  - Multilayered Point Defense, combining multiple types of defenses in a layer to thin out incoming defenses and minimize the chances of your ship being hit.
    - Long range PD such as dual purpose guns or AMMs thin out incoming missiles
    - Defensive jammers diverts some incoming missiles
    - Chaff & Flares further divers some more
    - PDTs destroy any remaining missiles, or ‘leakers’ that get too close to the ship

9.  Ship Building Basics

- **A Remark**

  Unlike most other RTS games, you need to be at least decent at theorycrafting (i.e making fleet builds) in order to play the Nebulous well. This is a far cry from other RTS games, where the game intrinsically guides you into making worker units, teching up, making infantry, then teching up again to make more advanced vehicles and air units (or other equivalents) both in campaign and in multiplayer. Meaning that even a non-gamer would relatively easily understand that you’re supposed to make units, gather resources, make more advanced tech structures, and make more advanced units. From there, players can also start to understand each unit’s role, strengths and counters, and decide their own army composition from the options they have.

  In Nebulous, the only thing everyone has in common are 3000 points (for most multiplayer matches) and the entire catalogue of

hulls, components, missiles, and strike craft of their faction. It offers unparalleled customization of your very own fleet, however It is very easy to create fleets that are completely ineffective in battle. The game does attempt to guide you a little with the presence of starter fleets, but it isn't clearly communicated what you are achieving when designing a fleet build.

As such, in this section we will try to reshape our understanding of RTS units and builds into what Nebulous has to offer. First by understanding what the general concept of a fleet builds, roles, strengths and counters, similar to other RTS units. Then we can move on to understanding what ship components do and what combinations work well, before moving on to advanced techniques that can maximize ship durability in combat or squeeze a bit more performance or utility within the 3000 point budget.

- **General concept of a fleet build**
  - Most multiplayer battles use 3000 point fleets.
  - The main goal of a fleet build : make a fleet that's reasonably effective, caters to a desired playstyle, and is 3000 points in cost.

- **Ships hulls and their roles.**
  - Each ship hull has their base characteristics : Cost, size, armor, baseline speed and maneuverability.
  - They also have a uniform amount of slots for **mounts** (external weapons and equipment), **compartments** (crew spaces), and **modules** (machinery), all of these combined makes a hull able to perform some roles better than others.
  - Hulls can then be further customized and built into a more specific purpose / archetype, creating a more efficient ship build.

- **Starter Fleets and their examples of what fleet build concept / archetype they embody and their playstyles.**
  - **TF Oak : Frontliners, Mid-Long range (8-11 km),** Utilizes heavy guns, tough armor, and decent agility to mitigate damage, maintain the battle line, and bring down enemy capital ships.

Is somewhat slow to reposition and lacks options to deal with swarms of smaller ships.

- **TF Birch : Skirmishers, Mid range (6-8 km)**
  Utilizes medium guns, high speed and agility to probe enemy lines and eliminate smaller targets, chipping away at the enemy's recon assets and making high impact flank attacks on larger targets.
  Cannot engage at long range, and is somewhat fragile at close range, so it uses its electronic warfare jammers to create a window of opportunity to attack or reposition.

- **TF Ash : Ambushers, Short range. (<6 km)**
  Utilizes beam cannons, missiles, and torpedoes to create devastating ambushes that can destroy unsuspecting ships in mere moments.
  Very fragile, slow, and needs to be at a close range, so it utilizes a dedicated jamming ship to create windows of opportunity to get close for an attack or to reposition to better cover.

- **Garnet Squadron : Frontliners, Ambusher, Mid range (6-8 km)**
  Utilizes a mixture of guns and plasma cannons to deal heavy and constant damage, while the sheer bulk of the ships and their armor allows them to buy enough time to destroy the enemy before the enemy destroys them.
  Has somewhat poor point defenses, slow to reposition, and works best when it can immediately engage at its preferred mid range bracket as it cannot engage at long range, so it has a jammer to help against missiles, to provide a window of opportunity to move into attack range and to prevent it from being focus fired from multiple fleets.

- **Tantalum Squadron : Control & Recon**
  Dispersed fleet that avoids direct engagements and focuses on neutralizing enemy recon assets around the battlespace while providing the team with recon as well as controlling objectives by using cheap ships to go for risky captures.
  Has limited capabilities if it needs to engage heavy targets, but can mass together for a decisive attack against a larger target with missiles, but only once or twice before they run out.

- You'll notice that most of these fleets have some things in common :
  - A primary weapon (TF Oak uses 450mm guns, TF Birch uses 250mm guns)
  - Sometimes a secondary weapon (Tantalum Squadron uses guns as primary, but missiles as secondary. TF Ash uses beam cannons as primary and missiles as secondary)
  - Point Defenses (TF Oak uses CIWS and flak guns, Garnet uses CIWS, laser, point defense missiles, and flak ammo, Tantalum relies on PD missiles and jammers)
  - Sensors, such as upgraded radar suites, a fire control radar, or a dedicated sensor vessel.
  - Sometimes, Electronic warfare. The most common one are radar jammers, which are best used by small and mid sized vessels, as large ships benefit less from it. Defensive jammers instead are better suited for larger ships.

- On a more strategic level, you see these fleets also have :
  - A defined purpose in battle (Anti light? Anti Capital? Skirmish? Map Control? Recon? etc.)
  - Strengths
  - Counters
  - Utility

  Notice that this isn't too different from an RTS unit?
  Once you understand the basic concept of what we're building, time to learn a bit of the how :

- **Buff modules, the main reason why specialized ships are better than general purpose in Nebulous.**
  - Buff modules (in game called weapon support modules), are modules and sometimes compartments that boost a weapon type's performance.
  - Most ship builds specialize in a certain type of weapon, mounting multiple buff modules that increase the performance of a weapon type.
  - For example, ships relying on guns equip many Ammunition Elevators, with capital ships using 4 or more, maximizing their guns' rate of fire. Carriers will equip multiple Deck Gear Lockers, and Flight Deck Traversal Systems to increase the throughput of strike craft.
  - Small ships typically don't use buff modules, as they don't have enough weapons to get enough value out of them.

- **OSP vs ANS and what each faction are strong and weak at.**
  - **Alliance Navy (ANS for short),**
    Thematically a modern navy, utilizing advanced current gen equipment, missiles, and ships.

    great armor, stealth, guns, EWAR, and missiles, excellent at battlespace control and combined fleet tactics. A well balanced faction that's easier to control for new players.

  - **Outlying Systems Protectorate (OSP),**
    Thematically a rebel / separatist faction, utilizing converted civilian ships and mothballed military ships equipped with last generation electronics, missiles, and strike crafts, combined with a few more janky weapons of their own.

    great mobility, high burst damage tools, versatile strike crafts with more diverse loadout options, decoys, and unconventional combat ships like the Marauder.
    Excels in ambush tactics, defeating enemy in detail, and hit & run attacks.
    A scrappy faction that requires a good understanding of fundamental movement and attack mechanics, with heavy emphasis on strike crafts, and is harder for a new player to use.

-> At this point you can play at a basic to mid level with a bit of practice, have fun!

Try completing the OSP 'Exception to the Rule' Campaign and play around with starter fleets with the AI, then play in a few multiplayer matches once you are feeling more confident with the fundamentals.

Addendum :
As a new player, you do not need to understand Missiles and Strike Craft to play the game well. However, what you do need to understand is how to defend yourself against them, since missiles and strike craft have the potential to wipe out a fleet in a heartbeat, having even the basic understanding of

defending against them will significantly increase your chances and avoid feelings of helplessness in battle.

However it is encouraged that you dip your toes into missiles and then strike craft and gain at least a basic understanding of their use, after all, know your enemy…

Missileer Basic Training

1. Basics of missile warfare

- **Concept of missiles**
  - Missiles are limited amount of guided munitions, they are powerful, accurate, and deadly. Able to wipe out a ship in a few hits, but are expensive and come in limited amounts.
  - Missile Consists of :
    - The warhead (the part that does damage),
    - The seeker (a sensor package that looks in front of the missile for targets), and
    - The guidance package (in game called Avionics, a software package that's mandatory for every missile and governs the missile's flight capabilities)

- **Missile Stats**
  - Missiles have obvious stats like **speed** (measured in meters / second), **maneuverability and acceleration** (measured in Gs), and **HP** (called body integrity in game)
  - There's also another stat, **Wall thickness**, this is essentially the missile's armor, but simplified. Any hit that doesn't penetrate the missile's wall thickness deals half damage.

- **Concept of different missile bodies and their roles**
  - Like hulls, missiles are separated into separate missile body types, which govern a missile's general role.

  - **SGM-1xx Balestra** :
    Compact defensive and light offense missile, limited effect against ships, may need multiple hits to deal appreciable damage to small ships.
    often called S1, and AMM (Anti Missile Missile) for specialized defensive variants with blast frag warheads.

  - **SGM-2xx Tempest** :
    General purpose, cheap & spammable anti ship missile. Good against most ship-sized targets.
    Often called S2.

  - **SGT-3xx Pilum** :
    Specialized close range, high damage weapon that can penetrate most point defenses. A few hits of these can cripple capital ships.
    Often called S3, S3T, or just torps.

  - **SGM-H Cyclone and Atlatl** (**Hybrids**):
    Expensive missiles with excellent Point Defense penetration that travels to their targets at insane speeds, ANS exclusive.
    Often called S2H for the Cyclone, and S3H for the Atlatl.

  - **CM-4xx Container**:
    Shipping containers converted into guided missiles by the OSP.
    Long range, cheap & spammable missile for the OSP with a massive payload that can wreck any ship in a few hits, but they are unreliable in terms of penetrating Point Defenses as they are large and easy to target.
    Often just called containers or boxes.

  - **SDM-1xx Lunge** and **SDM-2xx Typhoon**:
    dedicated long range anti fighter missiles used to shoot down strike craft before they enter attack range. The SDM-1xx is a specialized craft-only variant. The SDM-2xx is a longer ranged larger version that can be equipped to

ships and craft as well. Both SDM types are locked to the Blast Frag Warhead, and are completely ineffective against ship sized targets.

- **VLS (Vertical Launch System) and Concept of missile programming speed & programming channels**
  - VLS are self contained missile launch systems that carry ammo inside the mount itself.
  - VLS cannot be reloaded, once you run out of missiles, it's useless.
  - After ordering a VLS launch, missiles will take time to program before launching, creating a launch delay. This is known as the missile's programming time.
    - Defensive missiles that are fired by the PD Controller do not need any programming time.
  - Programming time depends on the missile body and the ship's programming speed modifier.
  - A ship can only program a certain amount of missiles at once, this is known as the ship's programming channels. Consequently, a ship can only launch a certain amount of missiles together in one salvo, equal to the amount of programming channels.
  - This means that more Programming Channels = a larger Salvo Size.
    - A larger salvo size means more missiles arrive on the enemy **at the same time**, giving an increased chance to penetrate enemy Point Defense.

- **Concept of MLS (Magazine Launch System)**
  - OSP exclusive, Clip based missile system, reloadable by drawing missiles from the magazine.
  - Needs to reload after draining its clip.
  - Needs to reload to switch missile types.
  - Cannot mix & match missile types in the clip.
  - MLS does not need programming time or channels. They will launch immediately upon order. The maximum salvo size is instead the amount of missiles inside the MLS's clip.
  - Force a reload by pressing R during downtime.

2. Softkill & Missile Seekers

- **Missile Seekers Concept**
  - Missile seekers are the missile's own eyes.
  - Seekers activate and see in a cone shaped area in front of the missile.
    - You can see the missile seeker's search area by using the sensors manager and clicking on the missile.
  - Once a valid target enters the seeker's search area, the seeker will lock on to it, guiding the missile towards it.
  - **Different missile seekers can see different things.**
  - **In Nebulous, Missiles <u>do not</u> lock on to friendly targets.**
- **Seeker Types, Abbreviation, and Basic Concept**
  - Active Radar **(ACT)**
    - Vulnerable to Chaff and Radar Jamming.
  - Semi-Active Radar **(SAH)**
    - Needs to be constantly guided by an illuminator
    - Vulnerable to Chaff and Radar Jamming.
  - Anti Radiation **(ARAD)**
    - Vulnerable to enemies disabling their Radar, and the EA99 'Conure' Active decoy
  - Wake **(WAKE)**
    - Somewhat unreliable, needs to be within a 90 degree angle behind the ship to start tracking.
    - Vulnerable to flares
  - Thermal **(THERM)**
    - Exactly the same as WAKE as a seeker, it's main purpose is as a Validator (we'll talk about them later)
  - Command **(CMD)**
    - Vulnerable to COMM Jammers
    - Completely immune to decoys
    - Only able to target enemy tracks
  - Electro Optical **(EO)**

        - This seeker is exclusive to the ANS.
        - Completely immune to decoys
        - Vulnerable to Dazzlers, but this is a relatively rare piece of equipment.

- ***Different seeker types see different things and can discriminate against different targets and decoys, they are also affected by different types of jamming.***
    - *As a beginner, just learn what each seeker type is vulnerable against.*

- **Basic concept of softkill split into decoying and jamming**
    - Decoying -> Introduce additional targets for the missile so it hopefully misses your ship, the decoys themselves will attract certain types of missile seekers to them.
        - Chaff -> Attracts **(ACT)** and **(SAH)**
        - Flares -> Attracts **(WAKE)**
        - EA99 ‘Conure’ Active Decoy -> Attracts **(ACT)** and **(ARAD)**
        - Container Decoy -> Attracts **(ACT)** and **(ARAD)**
        - **(EO)** and **(CMD)** guided missiles are **completely immune to any type of decoy.**
    - Jamming -> Blind enemy missile seeker
        - Split into three, RADAR Jam, COMM Jam, and EO Jam
            a. Radar Jam -> Effective against **(ACT)** and **(SAH)** seekers, weak against **(ARAD)**.
            b. COMM Jam -> Effective against **(CMD)** seeker
            c. EO Dazzler -> Effective against **(EO)** seeker

3. Hardkill

- **Hardkill Concept**
  - When missiles manage to track a target and blow through softkill measures, it has to penetrate Point Defense (PD)
  - Missiles rely on **Volume, Bulk, and Evasion** to penetrate PD
    - Volume, how many missiles are in a salvo, and how spread out they are.
      a. PDTs need time to rotate between missiles, during which they won't shoot down any missiles.
    - Bulk, how tough the missiles are, a combination of missile HP and wall thickness.
    - Evasion, a combination of the missile's speed, maneuverability, and any terminal evasive maneuvers it has.

- **Point Defense Turrets (PDTs) Concept**
  - PDTs are dedicated anti-missile weapons designed to react quickly to incoming missiles and shoot them down.
  - PDTs excel at intercepting small amounts of missiles (or in other words, a 'trickle') in a longer period of time. To penetrate PD, overwhelm it with a large amount of missiles at once.
  - PDTs cannot deal damage to ships and cannot target ships.

- **Different PDT types**
  - **CIWS (Close in Weapon System) :**
    - A rapid fire gatling gun that fires a stream of projectiles.
    - Best against slow missiles, or missiles that move in a straight line.
    - Decent against most missiles that travel directly into the direction of the turret, even fast missiles. Very high damage and can shred any missile if it hits.

- Weak against maneuvering missiles and high volume missile attacks.
- Short range (1750m), most used PD option.

- **Flak Guns** :
  - Fires timed explosive shells with an area of effect.
    a. Area of Effect can defeat evasive maneuvers of a missile.
  - Good vs large amounts of slow, low HP missiles
  - Needs time to deal damage, weak against fast missiles or missiles that have high bulk.
  - Short range (2000m)
- **Laser** :
  - Lasers have no travel time, meaning it can instantly hit a fast moving missile easily.
  - Good against fast & evasive, low - mid HP missiles.
  - Low DPS and needs to cool down often, Weak against missile attacks with high bulk or volume.
  - OSP has a shorter ranged laser (1750m), ANS has a long ranged laser (3000m)
- **Dual purpose guns** :
  - Ship main or secondary guns that have ammunition able to effectively hit missiles and strike craft.
  - 2nd line of defence against missiles at mid range, limited effectiveness in PD role, but can thin out missile attacks to give dedicated PDTs an easier time and deny an area from strike crafts.
  - Typically has a longer range than PDTs (6-8km), but poor rate of fire and accuracy compared to dedicated PDTs.
- **Mk95 Sarissa** :
  - A unique long range mini-railgun that fires what is essentially the space naval equivalent of birdshot against missiles.
  - Good against missiles moving in a straight line.
  - Weak against missiles that are evading, turning, or accelerating.
  - Extremely long range (8km), fires in rapid 3 round bursts.

- **Penetration Aids (Penaid) concept**
  - Penetration aids are an *expensive* addition to missiles that help them penetrate PD.
    - Decoy launcher creates multiple false targets that move in front of the missile's trajectory before impact, buying additional time for the missile to hit
    - Self screening jammer (SSJ) creates a spherical jamming area at a short range designed to spoof radar guided point defense missiles, but is ineffective against point defense radars.
    - Boosted Self Screening Jammer (BSSJ) creates a conical jamming area at a longer range that is effective at jamming point defense radars.
    - Hardened Skin increases missile HP, allowing it to survive long enough to impact, and allowing it to potentially survive an additional point defense missile hit.
    - Radar absorbent coating reduces the missile's visibility on radar. This generally doesn't help much on its own, but is much more effective with jamming, reducing the reaction time of point defense turrets.

- **PDMSL (PD Missile) / AMM (Anti Missile Missile) Concept**
  - AMMs are Missiles set to DEFENSIVE and using the Blast Frag or Blast Frag EL warheads.
  - Missiles not using the Blast Frag warhead cannot hit other missiles or strike crafts.
  - Defensive missiles do not need any programming time when automatically launched against threats.
  - AMMs can intercept missiles at a longer range than PDTs can, and are more reliable at doing so, but are very limited.
    - AMMs are best used against small numbers of expensive missiles, such as Hybrids.

4. Missile Designer

- **How to make a missile**
  - Select the missile’s seeker package and warhead.
- **Different missile bodies, what the missiles are for, etc.**
- **How to set engine settings**
- **How to set validation**
- **How to adjust warhead / engine size and what it affects**
- **Penetration aids and support modules**
- **Missile Cost vs Effectiveness**

5. Direct Fire Missiles

- **TRACK Fired -> Aimed based on radar track, poor TQ = bad missile launch vectors and may fail to acquire.**
- **POS Fired Direct Fire missile -> Aimed on vector, not on point.**
- **Semi Active Seeker**
- **CMD Seeker and TQ**

Advanced Concepts and Mechanics

1. Advanced Ship Movements

a. Concept of ship linear thrust & angular thrust

b. Directions of Thrusting

c. Different thrusters = different power output

d. Drive setups

e. Manual move / drive order dodging (can reposition while dodging unlike orbit dodge, more effective at avoiding damage than EVADE stance)

2. Advanced Ship Survivability

a. DC team micro (priority repairs based on situation)

b. DC team sitting on reinforced components

c. FLANK thrust management to conserve DC manpower during combat

d. Last second reactor shutdown (press at 33 seconds before overload and hold for 3s)

e. Chain restoring (Restoring a large locker from a reinforced locker to regain 1 or more restore)

f. Restore priority

g. **Concept of 0HP component DT tanking.**
    i. Components with 0% HP can continue to tank damage, even at 0HP, so long as incoming damage does not exceed the component’s Damage Threshold.
    ii. Relay back to the reinforced components and DC sitting on it, as long as DC stays on it and keeps restoring HP on it, it is very hard to bring it down to 0 and have another hit happen in a small enough interval that it destroys the component.

h. **Restoring reinforced components to preserve ship durability.**
    i. Restoring a reinforced locker with a restore left is a net benefit since it regains your ship's durability at no restore cost.

i. **Overpenetration**

3. Advanced Missile Defence

a. **Concept of EMCON (Emissions Control)**

b. **4 step missile defense (EMCON -> Chaff -> Self Illuminate -> Comm Jammer/ EO Jammer)**

c. **Manual chaffing advanced concepts**
    i. Why you shouldn’t rely on auto-chaff all the time
    ii. Manual chaff timing and amount
    iii. Ship movement to maximize chaff seduction chance.

d. **Scryer to identify enemy seeker types**

e. **Selective Softkill, reacting based scryer data to pick the best softkill option that consumes the least resources & requires least micro.**

   i. Validated missiles = vulnerable to jamming
   ii. Backup seeker missiles = pay attention to seeker combo and do the missile defense steps accordingly.
   iii. No backup or validator = possible support module / penaid

f. **PDMSL setups and settings mid fight.**

4. Advanced Sensors and EWAR

a. **Concept of current ship selected perspective**

   i. How your currently selected ship is the one that displays the data shown in your screen. (i.e Range data to target, visible jamming signals, visual tracks)
   ii. Selecting a different ship, even that of a teammate will make the UI change so it displays that ship’s picture / perspective of the battlespace.

b. **Advanced Radar Jammer concepts**

   i. reduction of detection ranges is different for different ships,
   ii. protection against FCR locks on small ships at certain ranges, how it affects different radars, how some radars can outrange jamming)

c. **How ship facing affects radar return to enemies, how ship radar returns affect how easy it is to hide with jamming.**

d. **Stacking Jammers (increases strength, diminishing returns)**

e. **Illuminators (Floodlight) vs jamming (enlarges enemy radar signature, making it easier to detect through jamming and lock through jamming)**

    i. ARR vs jamming (makes your radar more sensitive, increasing detection range vs small contacts and through jamming, does not stack)

f. **Cycle jamming (Jammers on different fire groups cycling in and out to maintain coverage)**

g. **BSHORT Jamming (Using Battleshort on jammers, extend duration but can cause damage eventually disabling it)**

h. **Jamming multiple targets at once using POS target**

i. **COMM Jamming and EO Jamming**

j. **Other uses of Burnthrough (detect small tracks at max range)**

k. **Directional Radars (EWR and Bloodhound)**

l. **Offset Scout Radar to counter jamming, having another ship outside of jamming that can provide tracks**

5. Advanced Gunnery

a. HOLD Fire to pre-aim guns on target
b. HOLD Fire to fire all casemate guns in unison
c. Visual Contact & Targeting concept
    i. Visual contacts are inaccurate, less accurate than most radars.
    ii. Visual contacts have their ship model revealed
    iii. Visual contacts are not shared in the team.
d. POS Targeting Guns (POS fire guns aims at a specific point in space not a vector)
    i. Engaging specific enemy ship parts at VIS range.
e. Good Positioning to get good angles on targets
f. Shell selection vs specific targets (RPF, Grapeshot vs small ships to slow & damage, HE to finish. AP to damage angled targets)

6. Energy Weapons

a. Concept of Beam Cannon
b. Concept of Plasma Cannon
c. Damage falloff concept
d. Armor destruction concept with Plasma
e. Battleshort concept and usage on beam cannon
f. Battleshort with Aurora (?)

7. Damage Spreading and Damage threshold advanced concepts

a. How damage spreading of HE shells work
b. How HEI Missiles do damage with damage rays / fragments
c. How damage spreading interacts with damage resistance and damage threshold
d. How damage falloff of energy weapons / beams interact with damage resistance and damage threshold.

8. Effective Engagement Ranges

a. How to decide on what range to take engagements at
b. Distance management, ‘kiting’
c. Identifying enemy preferred range bracket, how to take advantage of that based on your fleet range preference
d. How different guns have different effective ranges for different targets (ie 450mm guns can engage a bulk at 11km, but vs a Shuttle dont expect any hits until <5km)

9. Intermediate Shipbuilding

a. How to make a ship from scratch
b. Build archetypes
c. What things are generally good on each ship

d. Fleet Editor Hotkeys
e. Drive setups
f. Point priorities

10. Basic - Intermediate Game Sense

a. What enemy fleets tend to do / enemy ship roles
b. Identifying what enemy ships are based on track detection ranges
c. Identifying what enemy ships are equipped with based on firing patterns and sound
d. Missile cam intel
e. Intel Center
f. Deciding on strategies based on your fleet's composition and team's movement
g. How to quickly identify dead enemy ship (Oil Slick, Alarms, Escape Pods)
h. How to identify Container launched Decoys.

11. Hotkeys

a. Common Hotkeys (M to move, H Heading, O Orbit, X to Lock)
b. Set custom hotkeys for Burnthrough / BRN, Cease Fire, EMCON.
c. OSP Hotkeys : R to reload
d. Optimize Command Flow :
    i. Select ship with control group (1-10)
    ii. For move orders, use hotkeys (M to move, H for heading, etc.), skipping the need to right click to open the Action Panel.
    iii. Left click to issue movement command with disc or sphere widget
    iv. For attacking, right click on track, left click to select fire group, ship will engage.

Intermediate Missileer

1. **Missile Validators Concept**
    - Missile Validators are additional logic to the missile seeker based on the seeker type assigned as a validator.
    - Switch the seeker's function from TARGETING to VALIDATOR (purple)

2. Intermediate Missile Builds

- What each missile seeker does, what they see and doesn't see
    - Basic demonstration of decoy with chaff
    - Basic demonstration of decoy with EA99
    - Basic demonstration of jamming to stop missiles
- Terminal Maneuvers and how it helps penetrate CIWS
- Concept of how backup seekers and validation works in detail
- Rule of thumb : validator = more vulnerable to jamming, backup seeker = more vulnerable to chaff.

3. **Blast Frag Warhead Advanced Concepts**
    - Upon hitting a missile, Blast Frag warheads roll a chance to deal damage based on the impact angle.
        - Highest chance is from a head on impact (most common), or from a rear on impact.
        - Lowest chance is from a side on impact.
    - Blast Frag has about a 50% chance to deal damage on a head on impact. Blast Frag EL has about a 85% chance, but is much more expensive.

4. OSP Ordnance

- Basic concept of RL rocket launchers
- Basic concept of OSP mines, how mines work
- Mine types
- Mine use cases
- Best type of mine usage.
- Basic concept of mine containers

- Basic concept of Rocket / Submunition containers

5. Combined VLS salvos

- Using the salvo planner to combine different missiles with different seeker setups and penaids into a salvo to increase PD penetration and economize deployment of expensive penaids

6. Cruise missile basics

- Concept of cruise missiles, only some seekers are viable, pen aids to increase chance of PD penetration, use of terrain to mask missiles
- How to use the sphere widget to plot cruise missile paths
- Missile turn angle vs missile maneuverability.

7. Concept of Time on Target Attacks

- Using multiple ships launching missiles from different angles, timing it so all arrive at the same time, resulting in an overwhelming missile strike that can overpower point defense due to the combination of different attack vectors and amount of missiles.

8. Hybrid Missile & Staging Concept

→ **With this, you have more than enough knowledge to play at a level of Silvers with practice and confidence.**
Continue to increase your ability to micro and multitask in game, continue to better understand fleets compositions, strategies, general game sense, and map awareness, and you're well on your way to becoming a gold!
Keep playing and earn that coveted Commodore rank!

Remember that ranks in NEBULOUS are only a representation of how many matches someone completed.
There's no ELO system or SBMM in Nebulous. You simply gain XP to promotion every time you finish a game (10XP for losing or draw, 30XP for winning), so theoretically even someone who is a commodore might not understand everything here.

Advanced Shipbuilding

1. Identify your own playstyle, make ships and fleets around it….
2. Identifying how Damage spreading works on a particular ship, and placing components in such a way to maximize durability.
3. Building ships with less than 100% power supply, power priority

Advanced Missileer

1. ToT Cruise attacks
    a. Timing multiple cruise missile attacks together to hit at the same time
2. Combined MLS Salvos
    a. Microing different MLS Fire groups to fire mixed MLS salvos
    b. how to switch MLS missile type without firing
3. Manual cruise missile evasion / Sarissa Wiggle
    a. Basic concept and how to of doing missile evasion plotting for cruise missiles, especially to avoid fire from the Sarissa PDT

4. Illuminator micro to bypass chaff
    a. Concept of micro POS firing Illuminators to fire away from chaff, what to look for and how to do it quickly.

5. Maximizing HEKP damage, impacting an enemy from bow to stern to one shot unsuspecting ships.

6. TTGI Concept
    a. Missile seeker target switching concept
    b. Distance where missile is assured to hit its selected target, unless jammed
    c. Achieved by missile speed * 3 seconds.
    d. Practical application of TTGI in missile attacks to your advantage

7. Advanced Missile Strategies, Techniques, and Tactics
    a. Defensive jammer missiles / Killjoy missiles.
    b. Blind Yubbing
    c. Min-angle free weave
    d. Anti-Sarissa Tornado Box
    e. CMD hybrids with cheap backup seeker - Can bypass comms jamming
    f. Rear-aspect Wake validation cruise
    g. Insta-stage HEKP
    h. Offset illuminator SAH cruise
    i. Scout Missiles

    j. Other things I probably don't understand or have never seen before…

Strike Craft Basics (TBD, Jan 10 Carrier Update)

1. Basic concept of Carrier Operations
2. Basic concept of Strike Crafts and Loadouts
3. Concept of Strike craft sorties, fuel, and bingo.
4. Concept of Strike Craft Pre Flight & Post Flight servicing
5. Types of Strike Craft

6. OSP Strike Craft vs ANS Strike Craft
7. Anti Craft Measures
8. SDM Missiles
9. Unguided weapons on craft
    a. Rockets
    b. Bombs (KBU, RBU, CBU)
10. TBD

Advanced Strike Craft & Carrier Operations (TBD, Jan 10 Carrier Update)

1. Strike craft micro
2. Strike Craft Time on Target attacks
3. Dogfighting
4. TBD….
5. ….
1.
1.
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