

From the team that brought you Grid-Fu

PROJECT POSEIDON

A PRACTICAL MANUAL





This Document is classified as **Hurf-Blurf**. If you are **not** a member of **GARPA**, a **Goonswarm Director** or a **qualified Fleet Commander**, reading this document will cause your balls to shrivel up and fall off, get cancer and/or AIDS.

Project Poseidon

May 2009

Entering the Realm of Poseidon

Investigation into the ongoing ability to create deep safe spots has been a key goal of GARPA since the removal of the carrier-fighter method. Deep safe spots are integral to the safety of battleship fleets in hostile territory. Renewed interest in creating deep safes started shortly after the loss of C3N and the assault of AZN by GBC forces when agents observed BoB fleets seemingly creating new safes on the fly. Further investigation by GARPA and GIA concluded that the GBC were using old spots from the Great Southern War. However, while this investigation was ongoing, practical testing uncovered several potential game mechanics for the generation of new deep safe spots. Project Poseidon was assigned to the easiest, quickest, and safest method found.

This manual is intended to teach its user how to create deep safe spots on command, as well as the logic behind doing so.

A ship is limited to a specific volume of space, and this volume is defined by the outermost celestial objects. By having the capability to breach the extents of the celestial objects in a given solar system, a ship can place itself and others at an advantage over hostile ships that lack the same capability. Use of Deep Safe Spots is many and varied, and the bookmarks were once considered to be unique. **This is no longer the case.**

Useful Terminology

Take a moment to acquaint yourself with some of the terminology that will help you navigate your way through this document.

In numerous places, the same terms will be referred to:

- Point A: The start of a player-controlled warp.
- Point B: The destination of a player-controlled warp.
- Impulse mechanics: The normal ship flight model used when not in Warp.
- Warp mechanics: The ship flight behavior when in warp from Point A to Point B.
- Impulse mode: The default player-controlled ship mode, using Impulse mechanics.



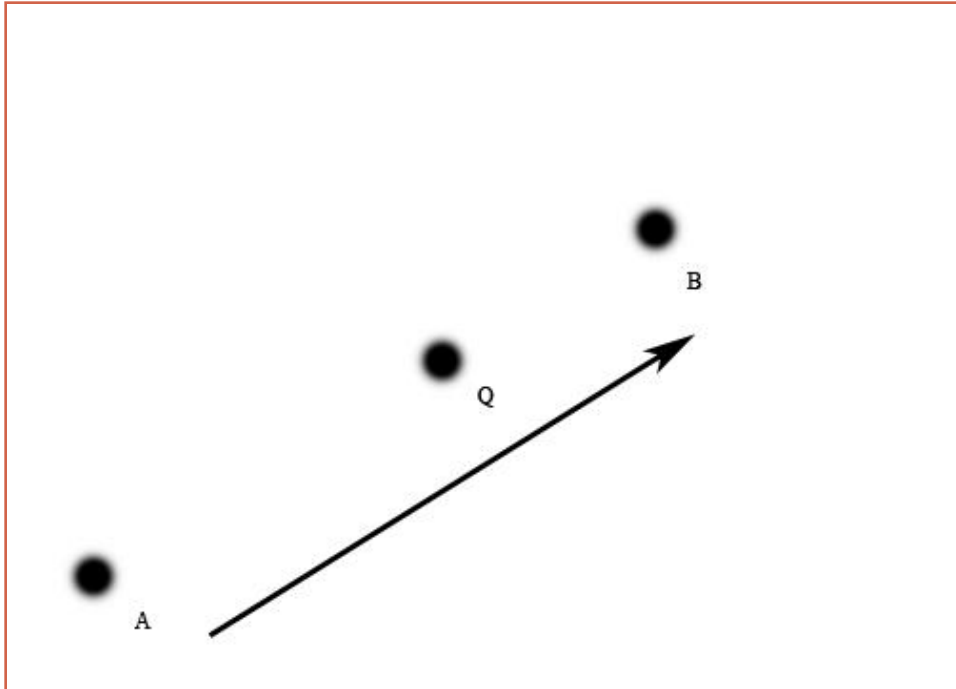
- Pre-Warp mode: Used to align for a warp, using Impulse mechanics.
- In-Warp mode: Used to warp from Point A to Point B using Warp mechanics.
- E-Warp: The uncontrolled warp initiated by the server when logging out and logging in, consisting of a Pre-Warp mode, an In-Warp mode, and then an idling Impulse-mode.
- Point E: The point where the ship warps to/from when doing an E-Warp.
- Point Q: Where the client thinks Ctrl-Q was issued.
- Point R: Where the server thinks Ctrl-Q was issued.
- Point S: The Poseidon Point.

The Short Version

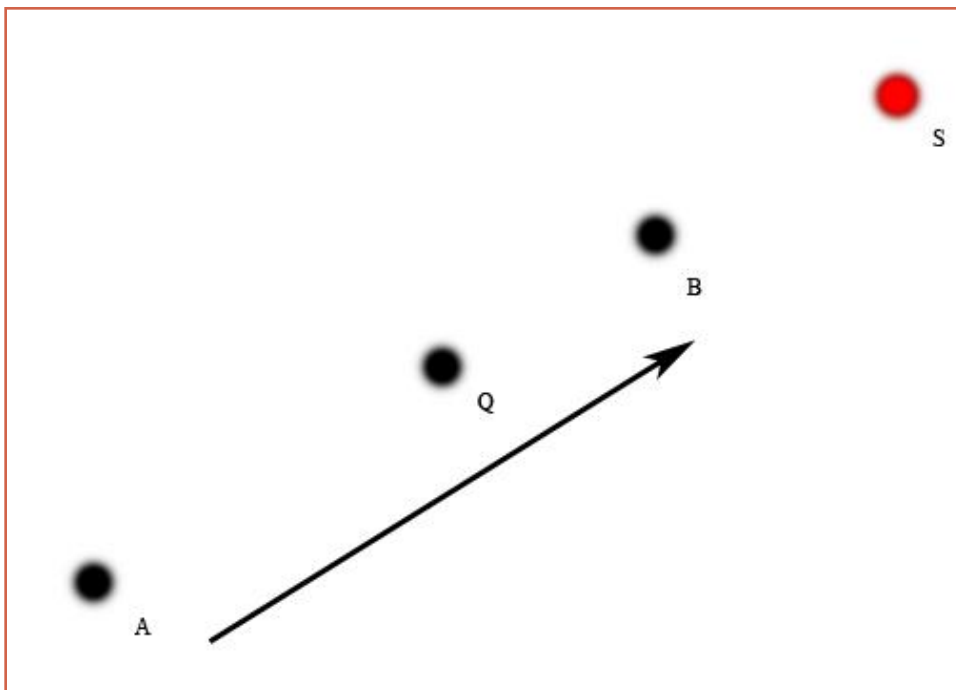
1. Get into a ship that is not too agile.
2. Select points A and B as your warp path, based upon existing celestial objects or bookmarks.



3. Point Q lies between A and B, and is $(\text{ship top warp speed in AU/s} * 2)$ AU from B.



4. Initiate Warp from Point A to Point B.
5. Ctrl-Q when the ship is at Point Q in warp.
6. Log back in onto the same character as quickly as possible.
7. When the ship speed drops below 10 km/s, create a bookmark at the current location. This bookmark is Point S, the Poseidon Point, and it should lie beyond Point B.





Too Short; Didn't Understand

What now follows is an explanation of what happens when the above steps are performed. A number of concepts will be explained that are relevant to the operation, and in order such that early concepts are used by later concepts to build the entire system of events. It is recommended that each paragraph is not only **read in the order they are presented**, but that also each paragraph is **understood**. The concepts are also explained only in relevance to Project Poseidon. Extraneous details that do not impact upon the project are not mentioned.

Warp, Impulse, Acceleration, and Deceleration

Warp acceleration and deceleration is a fixed exponential function over time that ignores every attribute of the ship. Top Warp Speed will act as a limit, but below that limit every ship accelerates and decelerates in warp exactly the same. Ship agility (the Mass and Inertia Modifier) has no effect.

Impulse acceleration and deceleration is a much more complicated model, and ship agility is a very significant factor. The ship is under direct control of the player, such as straight-line motion, orbits and approaches, and various active modules affect the mechanics. Different ships perform differently under Impulse mechanics.

Player-controlled ships exist in one of **three flight modes**. They do not exist in two modes at once, and they will always be in one of the following modes:

Impulse-mode is subject to Impulse mechanics. The only exit from Impulse-mode is to Pre-Warp mode, which is done with a warp command. The player has full control of the ship when in Impulse-mode. The majority of player time spent in space is in Impulse-mode. When a warp command is issued, Impulse-mode switches to Pre-Warp mode at Point A.

Pre-Warp mode is used to align the ship for a warp. Pre-Warp mode uses Impulse mechanics to change the ship's velocity vector to point to the warp destination at 75% top impulse speed. When the alignment and speed is reached, Pre-Warp mode switches to In-Warp mode. During Pre-Warp mode, the player does not have any ship control, except for using Ctrl-Space to abort and return to Impulse-mode.

In-Warp mode uses Warp mechanics to move a ship to Point B. When the ship has decelerated to 75% top impulse speed, In-Warp mode switches to Impulse-mode. During In-Warp mode, the player has no control at all. No direction changes are possible, warp commands cannot be performed, and In-Warp mode cannot be aborted.

Control-Q, The Short Version

When Ctrl-Q is pressed, the ship is given a warp command by the server to warp to Point E,



1,000,000km away. The ship enters Pre-Warp mode to align at 75% top speed towards Point E and then enters In-Warp mode. This is what is commonly known as the E-Warp. Unlike a normal warp, the Pre-Warp phase of an E-Warp cannot be aborted. After arriving at Point E, the ship drops into Impulse-mode.

Control-Q, The Breaking Things Version

- Executing a warp requires using Pre-Warp mode to align the ship at 75% top speed.
- A ship in In-Warp mode cannot enter Pre-Warp mode until In-Warp has completed.
- Ctrl-Q makes a ship enter Pre-Warp mode, for warping to Point E.

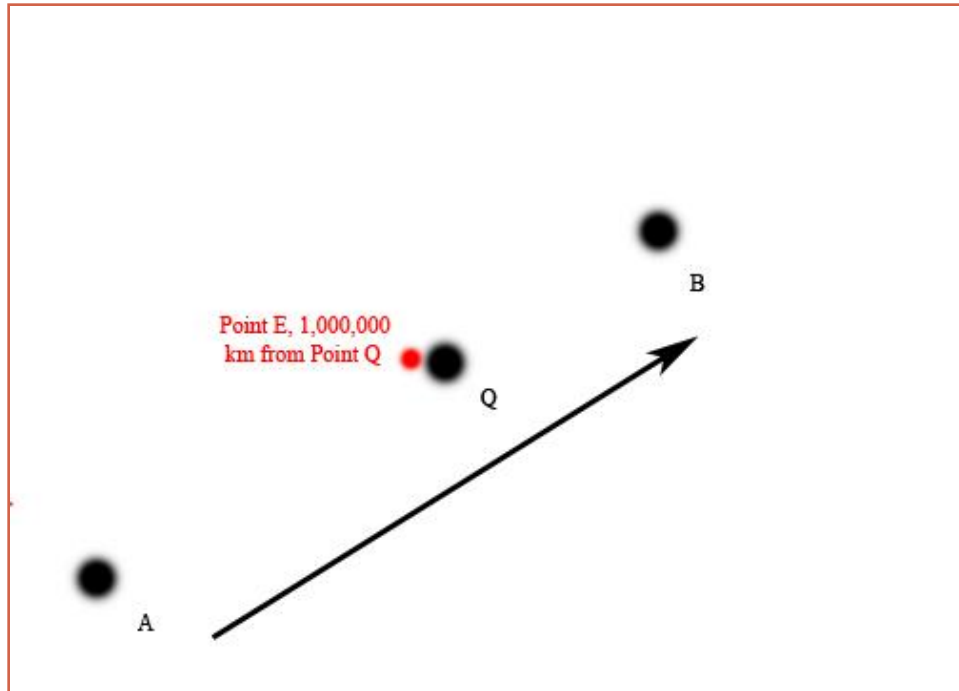
And therein lies the contradiction. However, CCP would appear to have made logging off somewhat sacrosanct, and to achieve this, Ctrl-Q immediately forces the ship into Pre-Warp mode, even if it is In-Warp. This mode transition forced by Ctrl-Q is the key to Poseidon.

This forced mode change does nothing else to the ship, and it specifically does not change the current velocity. This results in the ship being in Pre-Warp mode, aligning for the newly assigned Point E using impulse mechanics, but at warp speed. An example or two may help illustrate the magnitudes involved in this velocity disparity:

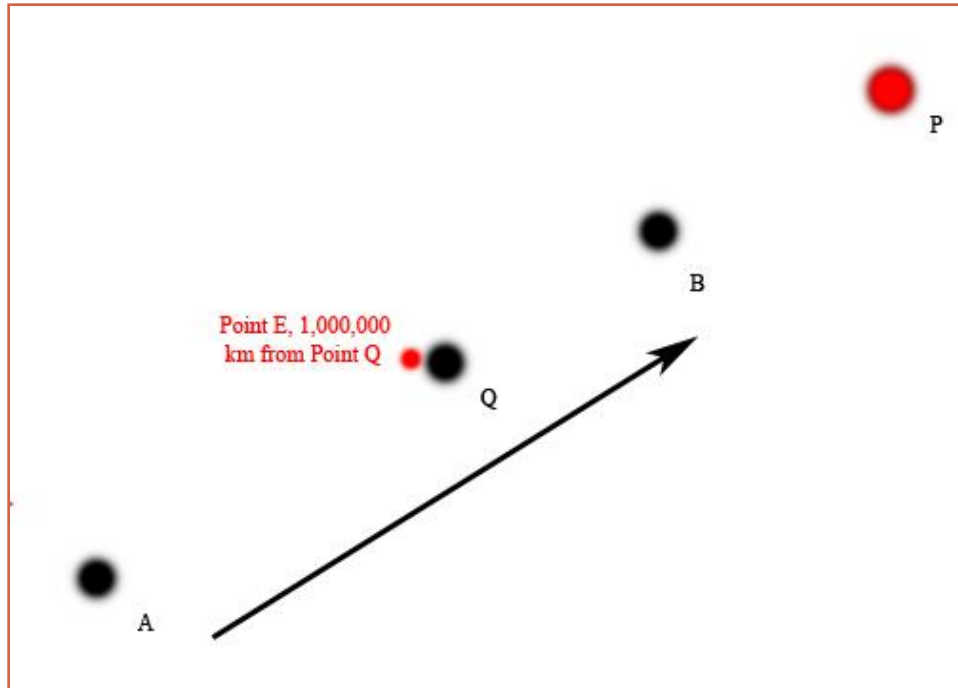
1) Apocalypse J has a top speed of 117m/s in Impulse mode and 3AU/s in In-Warp mode. 1AU = 149,600,000,000m, so top Warp speed is equal to 448,800,000,000m/s.

2) Anathema K has a top speed of 390m/s under Impulse, and 13.5AU/s in Warp. In other words, 2,019,600,000,000m/s.

To complete Pre-Warp, the ship has to align to Point E for the E-Warp. But the ship is currently racing off on a different vector at a speed measured in AU/s. After only one second of deceleration, Point E lies directly behind the ship. The Pre-Warp mode deceleration continues, using Impulse mechanics, until the ship can haul itself around to align to Point E and transition from Pre-Warp mode to In-warp mode.



And as mentioned previously, the Impulse deceleration can be slower than Warp deceleration if the ship agility is low enough. If the Impulse deceleration is slow enough, then the ship can overshoot the original warp destination. By bookmarking the spot where the ship reaches 0m/s and turns around, Point S, a Poseidon Point is created that lies outside the outer extents of the solar system. And bookmarking Point S requires being logged in. After the Ctrl-Q in warp, the ship will remain in space for 60 seconds. By re-establishing a connection to the ship before this time limit expires, the ship will not disappear from space. This allows the ship to complete the maneuver, and allows Point S to be bookmarked.



Tranquility Isn't Instant: Hitting The Perfect Spot

Assembling the previous facts together implies that the best overshoot can be obtained with a Ctrl-Q at the exact final point in the Warp path where the ship is at maximum Warp speed. In a perfect world, Point Q and Point R will be identical, the server and the client agree exactly where the ship was when Ctrl-Q was pressed.

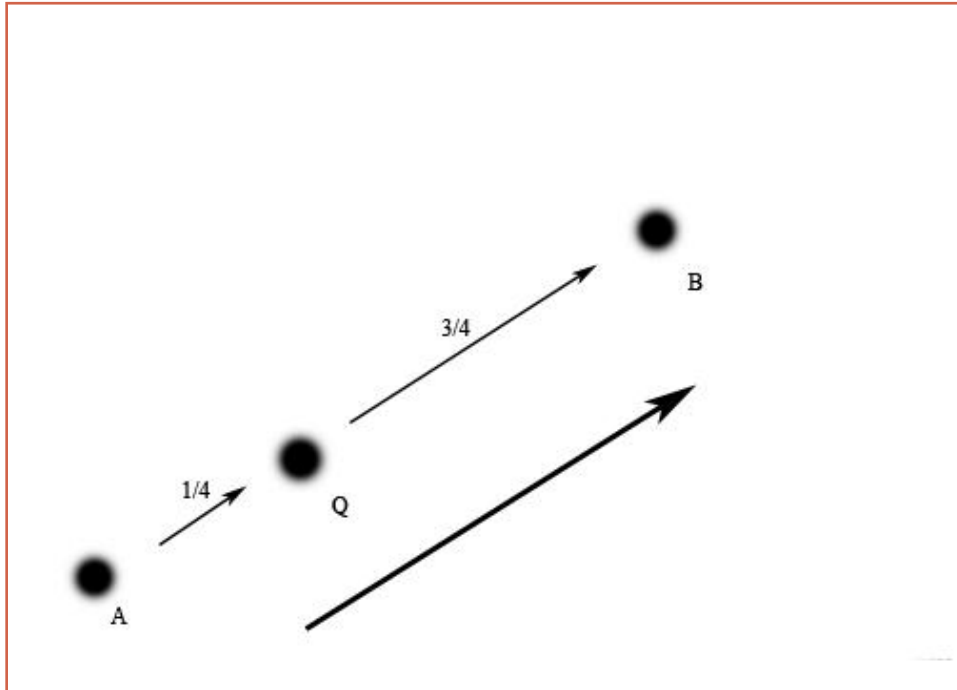
Back in the real world, the client may take a moment before sending the Ctrl-Q. The intervening internet tubes will take some time to carry the Ctrl-Q to the server. The server may take a moment or seven before accepting and processing the Ctrl-Q, and even then the server doesn't track the warp position in real-time, but instead in steps. Therefore, Point Q and Point R will not be the same, and more often than not Point R will lie past Point Q.

It is better to guarantee being at top Warp speed than a bit closer to Point B to maximize the overshoot, and allowing **two seconds of top warp speed flight** provides a solid margin of error to ensure a good overshoot.

Dealing With The Short Warp

It is still possible to Poseidon on a short warp where the ship does not achieve full warp speed, or

will be at top warp speed for a very short period of time. Due to how the server and client ultimately disagree which regards to Points Q and R, the exercise is much more luck-based. The bottom line in these cases is to Ctrl-Q two seconds before reaching **top warp speed**. If the run is too short to achieve top warp speed, then Ctrl-Q two seconds before reaching the **terminal velocity point**. The terminal velocity point on such warps lies one quarter along the warp path measured from the start.



Pimp My Ride, Bro': Ship Choice

To perform a successful Poseidon, ship choice is critical. The ship should have a low enough agility to ensure it overshoots the original Warp destination, and a high top speed in warp to give a longer overshoot. Battleships and Industrials are obvious candidates, and work well. Each overshoot will be multiple AUs. A typical 1600mm Plated Falcon will also overshoot, but not as much as a battleship.

There are no modules or charges that worsen the Inertia Modifier of the ship. Therefore, the only option for minimizing overall agility is the Reinforced Steel Plate I line of Armor Plates. These give the most Mass addition.

The best hull in terms of longest overshoot is the Anathema. It has the highest power grid and lowest agility of all of the Covert Ops Frigates. A Micro Auxiliary Power Core allows a 400mm Reinforced Steel Plate I and a 100mm Reinforced Steel Plate I to be fitted in addition to an



online Covert Ops Cloaking Device II. A 1mn Microwarpdrive can also be fitted, and online if the 400mm Plate is offlined.

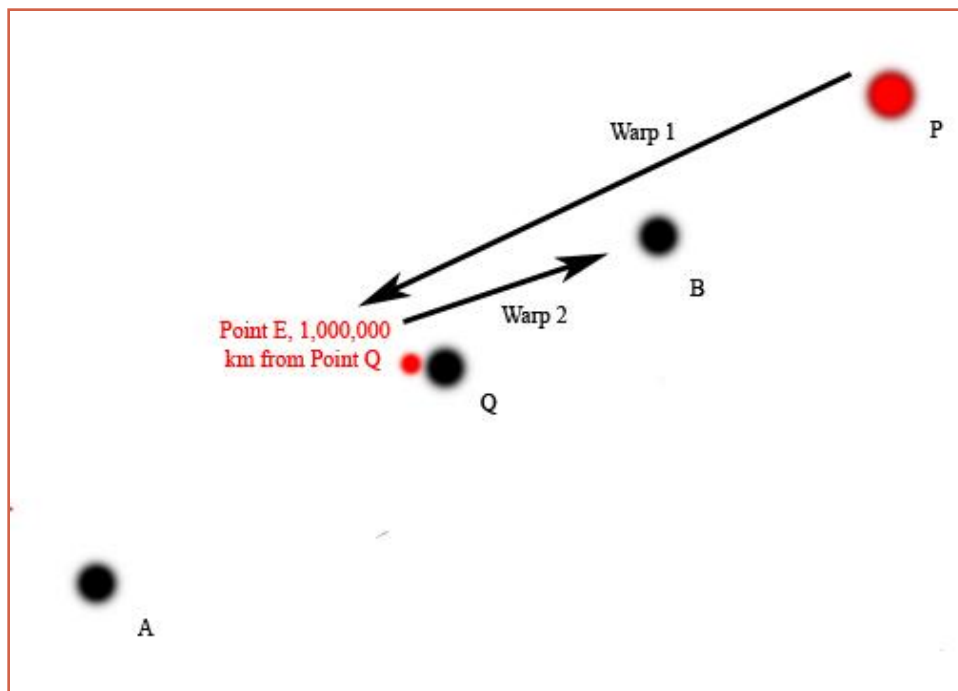
The other three Covert Ops frigates can be fitted with the MAPC/400mm Plate pair with the cloak online and the MWD offline and still achieve useable overshoots. However, they have better align times so will overshoot a shorter distance.

And finally, Hyperspatial Velocity Optimizer rigs increase the top warp speed, extending the possible overshoot distance even more, and the overall effect is much greater than the effect of plates. A naked anathema unriggered will overshoot Point R by 51AU. A plated anathema unriggered will overshoot Point R by 69AU. A naked rigged anathema will overshoot Point R by 83AU.

The overall overshoot distance from Point R is a function of ship align time in EFT (which is derived from the ship agility, which itself is derived from the Inertia Modifier and the Mass of the ship) and current speed at the moment of the Ctrl-Q.

Give Me Control, Damn You!

After logging back in after the Ctrl-Q, the ship is in Pre-Warp mode aiming for Point E as part of an E-Warp. Once aligned, the ship enters In-Warp mode, and arrives at E. That completes the logoff E-Warp, and all that remains is the logon E-Warp. The ship will now enter Pre-Warp mode and align for Point B, and then do the In-Warp mode to arrive there, finally returning control upon arrival by switching the ship into Impulse mode. The lack of player control during these steps is the result of the post-Ctrl-Q Pre-Warp being the first step in an E-Warp, which as noted earlier cannot be aborted.



How Deep Can You Go?

Once the first Poseidon Point is created, it can then be used as a warp destination for a second Poseidon Point further out, past the first. That second Poseidon Point can then be used to make a third, more distant Poseidon Point. Successive repetitions of the operation allow a Deep Safe Spot to be created at any distance, given sufficient time.