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## **Tips and Troubleshooting**

### Tips

If you don't hear any sound

If the sound seems clipped, or the sound effects are delayed

If FURY<sup>3</sup> displays a message asking for the CD-ROM

If your monitor display setting is higher than 256 colors

If the graphics are not as smooth as you would like

If the graphics have less detail than you would like

If game play is slower than you would like

If you are flying upside down and don't want to be

If the ship's instruments are not displayed

If the cockpit is not displayed

If the joystick does not function correctly

If the keyboard does not work as expected

If the + and - keys don't work

## **The Bion threat and how to defeat it**

During the IP Wars, the Terrans designed a race of bionic warriors known for their cunning and their brutal strength. Physically superior and ruthlessly aggressive, a single troop of Bions could eliminate the inhabitants of a planet within days.

The Bion war effort saved the Coalition, but nearly destroyed Terran. After the war, Bion aggression could not be contained. Peaceful coexistence between Bions and Terrans proved impossible. The ensuing Bion Wars are known for their brevity -- and violence.

In 2832, the Coalition ordered complete Bion dismantlement and instituted Terran's renowned Council of Peace -- a military defense force inferior to none.... Unknown to the Coalition, a few Bions survived and have assembled on a distant planet called Fury.

The Bion plan is to seize seven more Coalition planets whose resources will help them attain their ultimate goal -- total domination of space from the Bion Fury outpost.

As a member of the Council of Peace, it's your mission to stop them.

Welcome home, Councilor.

### **Defeating the threat**

As a member of Terran's Council of Peace, your role in this intergalactic war is crucial. Bring down the Bions and peace is restored. Allow the Bions to succeed, and you can kiss the Coalition good-bye.

Trust the intelligence report for each planet. It provides you with the latest information concerning Bion infiltration, and satellite views of critical Bion targets. Also trust your ship. Its Compass, when used with the Distance Indicator, will help you steer straight toward a Bion target.

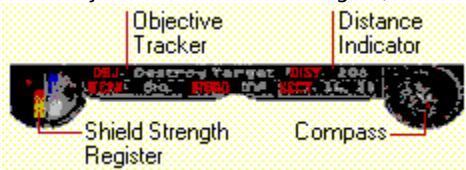
Each planet contains three separate missions. Once you've successfully completed all three missions, your ship will transport you to the next planet. Intelligence has sighted Bion infiltration on eight planets in all.... The last planet is a killer.

Be ruthless, Councilor. The Bions are.

## How to play FURY<sup>3</sup>

### Objective

Destroy all mission-critical targets, eliminating as many other targets as you can along the way.



### Targets

Each planet contains 3 missions. To complete a mission, you must eliminate all mission-critical targets. Here's how:

- 1 Keep your Compass pointed straight up -- it's programmed to guide you to these mission-critical targets.
- 2 Watch the Distance Indicator. It will approach "0" as you approach a target.
- 3 Look at the Objective Tracker. It will indicate what your next target is.
- 4 Blast the target to bits!

After you've completed a planet's third mission, the Coalition will transport you to the next planet, often via a Jump Zone.

### Shield strength

Maintain your shield strength -- the more you have, the more likely you are to reach the next planet alive.

Keep an eye out for floating powerUps. Some have the power to restore your shields.

Watch your Shield Strength Register. When it's drained, your ship will nosedive. You'll have to start the mission from the beginning, unless you saved along the way.

### Weapons

When you see a hovering weapons cache, fly straight toward it to upload the goods. Then select the weapon you want to fire by pressing the key assigned to it.

<u>To activate</u>	<u>Press</u>
<u>ServoKinetic Laser (SKL)</u>	1
<u>Dispersion Cannon 14 (DC14)</u>	2
<u>Rapid-Fire Laser (RFL20)</u>	3
<u>Dead-On Missile (DOM)</u>	4
<u>Viper (VIP)</u>	5
<u>Bion Fury Missile (BFM)</u>	6
<u>F<sup>3</sup> (FFF)</u>	7

### Strategy

After you've destroyed a mission-critical target, consider your next move carefully.

- The quickest way to get off a planet is to go directly to the next mission-critical target.
- For a higher score, blast everything in sight.
- Press TAB to use the Satellite Map and plan optional sorties to remote targets and tunnels.

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### See also

[Moving to the next planet](#)

[Scoring and levels of difficulty](#)

[The Instrument Panel](#)

Displaying or hiding the Satellite Map

Locating targets, checkpoints, and tunnels

### **Scoring and levels of difficulty**

All hits are valued equally. You receive 100 points per air or ground hit. Spare the greenery -- palm trees and seaweed are *not* the enemy. You'll lose 100 points for each one you destroy.

Too easy? For a more aggressive enemy with greater firepower, choose a harder level of play. Enemy firepower and reckless flying take their toll on your ship. When your shield strength is gone, so are you.

Coalition reconnaissance confirms your hits after each mission. Satellites also search for and report damage to vegetation. Palm tree and seaweed losses are reported in the "green" category on your mission summary. If records indicate that you are among the Coalition's top ten pilots, your name is placed on the High Score roster. The best of this elite group traditionally leaves an inspirational message.

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### **See also**

[Choosing the level of difficulty](#)

[Displaying the high score](#)

### **To move to the next planet**

The [Coalition](#) has a policy about unfinished business. Finish what you start, or what you've started may finish off the Coalition.

Based on this philosophy, the Coalition has programmed a series of mission-critical objectives into your ship. As soon as you achieve the last objective on a planet, your [Objective Tracker](#) may indicate that a [Jump Zone](#) is your next goal.

Jump Zones house the energy and data required to transport you to the next planet. You locate Jump Zones the same way you locate any target -- with your [Compass](#) and [Distance Indicator](#).

If you succeed in reaching a Jump Zone, your ship locks into autopilot for transport to the next planet. You'll fly at a speed faster than Bion war ships can follow. This could be your only breather for quite a while. Enjoy.

Reconnaissance indicates that some of the Jump Zones have been destroyed. Use your instincts. The Coalition monitors the activities of planet Guardians. If you succeed in destroying a Guardian, the Coalition will do everything in its power to get you off the planet alive.

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### **See also**

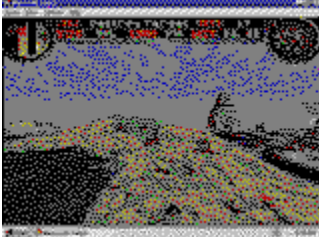
[The planets, overview](#)

[Locating targets, checkpoints, and tunnels](#)

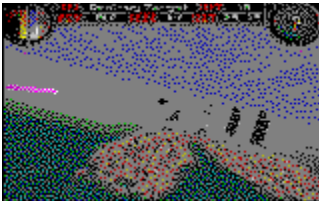
### To speed up game play by changing the format

Game speed is determined by your hardware and the graphics display that you choose. The three levels of graphic display are:

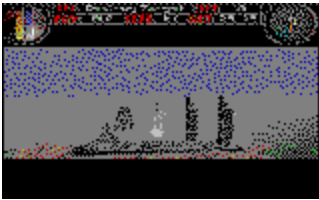
**Normal** -- Press F4 to switch to Windows mode (menus and taskbar displayed).



**Faster** -- Press F4 to switch to Full Screen (no menus or taskbar).



**Fastest** -- Press [ ] (bracket keys) to switch in or out of Panoramic format.



### Tips

- Within any of these graphic displays, you can change the instrument display by pressing C repeatedly, and the pilot view by pressing V repeatedly.
- When you press F4 to switch between Windows mode and Full Screen format, game play may be interrupted momentarily while FURY<sup>3</sup> changes the display.

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### See also

[Changing the instrument display](#)

[Viewing your ship from the outside](#)

**PowerUps**

After you destroy a Bion bunker, you may discover a treasure trove of stashed powerUps. Don't ask how they got there, just take them as you see them, and run.

**Shields Restored**

Fly through the rotating shield and your shields will be restored to 100%.

**Shield Boost**

Pick up a hovering radon battery core and watch your shield strength go up 25%.

**Turbo Thrust**

Turbo Thrust fuel makes the speed of light seem slow. Grab the floating fuel injection engine and, when the moment seems right, press Button 2 on the joystick or press F on the keyboard to let your ship r-i-p!

**Invisibility**

If you come across a glowing red orb, by all means grab it. A timer in the lower-right corner of your screen counts down the 30 seconds that the Bions won't be able to tell you're around. There's nothing like flying next to an enemy when he doesn't know you're there.

**Invincibility**

Fly through the glistening blue orb and fear no more. Let the bombs drop! You won't feel a thing. DO watch the timer in the lower-right corner of the screen so you'll know when you're about to lose your invincible edge.



**To display or hide the Satellite Map**

To display the Satellite Map and pause the action:

- ▶ Press TAB. Or, on the View menu, click Map.

To hide the Satellite Map and resume battle, repeat the procedure.

## System Requirements

To run **FURY** you need:

- 486DX/66 MHz or higher processor
- 8 MB of RAM
- Either:
  - Microsoft® Windows 95® operating system
- or
- MS-DOS® operating system version 5.0 or later with Microsoft® Windows® operating system version 3.1 or later
- Available hard disk space:
  - For Windows 95, 10 MB of available hard disk space
  - For Windows 3.1, 14 MB of available hard disk space, plus a 10 MB swap file if you have less than 12 MB of RAM. See the README for more information
- Double-speed or faster CD-ROM drive
- Local bus SVGA video, 256-color display
- Sound board plus speakers or headphones to hear audio

## Recommended

- Joystick or other flight control
- Microsoft Mouse or other pointing device
- For best play:
  - Under Windows 95, 55 MB of available hard disk space
  - Under Windows 3.1, 70 MB of available hard disk space

### **To turn Quick Help on or off**

- 1 On the Help menu, click [Quick Help](#).
- 2 Check or clear the Skip Quick Help at Startup check box.

When Skip Quick Help at Startup is cleared, **FURY<sup>3</sup>** displays the Quick Help dialog box every time you start **FURY<sup>3</sup>**.

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### **See also**

[The Bion Threat and How to Defeat It](#)

[Scoring and levels of difficulty](#)

[Choosing the level of difficulty](#)

[Picking up weapons](#)

[Selecting and firing a weapon](#)

[Using the keyboard](#)

[Using a joystick](#)

## **Quick Help**

### Objective

- Complete 3 missions on each of eight planets by eliminating all mission-critical targets. Destroying other ships or installations will increase your score.

### Strategy

- To locate a mission-critical target, maintain a 12 o'clock Compass heading and watch your ship's Distance Indicator. When the Distance Indicator reaches "0," you're there.





Flight Control: Arrow Keys

Fire Weapon: SPACEBAR

## Using the keyboard

You can use the keyboard to control your flight, weapons, views, and game play.

### Flight controls

<u>To</u>	<u>Press</u>
Increase/decrease throttle	A/Z
Bank left/right	 
Nose up/down	 
Roll left/right	HOME/PAGE UP
Turbo Thrust	F
Display/hide Satellite Map	TAB

### Weapons

<u>To</u>	<u>Press</u>
Select weapon	1-7
Fire weapon	SPACEBAR
Display/hide crosshairs	X

### Views

<u>To</u>	<u>Press</u>
Cycle through pilot views	V
Cycle through instrument displays	C
In <u>Outside View</u> , pan:	
Left/right	INS/DEL
Up/down	- / + (KEYPAD)
Center	PERIOD (.)
<u>Full Screen</u> on/off	F4
Show/hide mission status	BACKSPACE

### Cockpit windows

<u>To</u>	<u>Press</u>
Look out window:	

Up	- (KEYPAD)
Left/right	INS/DEL

### **Game play**

<b>To</b>	<b>Press</b>
Start new game	F2
Pause/resume	F3
Minimize game	ALT, SPACEBAR, N
Save game for later play	CTRL+S
Display Help	F1
Mute sound	CTRL+M
Resume saved game	CTRL+R

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### **See also**

[Customizing keyboard settings](#)

## Using a joystick

<u>To</u>	<u>Press</u>
Fire weapon	Button 1
Turbo Thrust	Button 2
Decrease throttle	Button 3
Increase throttle	Button 4
Adjust throttle	Throttle Control
In Cockpit view:	
Look out cockpit windows	Hat Switch
In Outside view:	
Pan up, down, left, right	Hat Switch

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### See also

[Customizing joystick settings](#)

[Calibrating the joystick](#)

**Using a mouse**

You can use a mouse or other pointing device to choose commands from the menus. The mouse does not affect flight control.



**To start a new game**

- 1 If you are currently playing a game, you will need to end it by pressing ESC or by clicking End Game on the Game menu.
- 2 To start a new game, on the Game menu, click New Game or press F2.

**Important:** If you are ending a game, you may want to save it before starting another one. If you choose to end the game without saving it, you will have to repeat any missions you completed during the game to continue your journey.

### **To pause during a game**

- ▶ To pause or resume a game, on the Game menu, click Pause Game or press F3.

The game also pauses when you:

- Press P or the PAUSE key.
- Display a menu.
- Press F1 for Help.
- Press TAB to display the Satellite Map.

### **Tip**

World invading your flight pattern? You can instantly pause and minimize FURY<sup>3</sup> by pressing ALT, SPACEBAR, N.

When your earthly duties are complete, you resume battle in Windows 95 by clicking FURY<sup>3</sup>'s taskbar icon. In Windows 3.1, double-click the FURY<sup>3</sup> icon.

**To end a game without exiting FURY<sup>®</sup>**

- ▶ On the Game menu, click End Game or press ESC.

**Important:** To resume action where you left off, you'll need to save the game before ending it. If you choose to end the game without saving, you will have to repeat any missions you have completed to continue your journey.

**Tip**

You can press ESC to end a game, or you can press ALT, SPACEBAR, N to instantly pause and minimize a game for later play.

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**See also**

[Saving a game for later play](#)

[Exiting FURY<sup>®</sup>](#)

**To exit FURY<sup>3</sup>**

- ▶ On the Game menu, click Exit or press ALT+F4.

**Tip**

To maintain progress on your journey toward the planet Fury, you must save your game before ending it or before exiting FURY<sup>3</sup>. If you prefer to minimize FURY<sup>3</sup> instead, press ALT, SPACEBAR, N.

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**See also**

[Ending a game without exiting](#)

### **To save a game**

- ▶ On the Game menu, click Save Game or press CTRL+S.

To maintain progress on your journey toward the planet Fury, you must save before ending a game. When you save, FURY3 stores your score, your location, your onboard weapon inventory, and your achievements. Flight information is normally stored in the Data folder of your FURY3 folder.

**Important:** Be forewarned that tunnels are especially dangerous. Radio communications cannot reach the Coalition. Once you enter a tunnel, you're on your own until you exit. Your request to save will not be heard.

### **Tip**

Surrounded by pesky Bions? About to enter a subterranean space? Face to face with a planet Guardian? Press CTRL+S to save the game, then fight it out knowing you can travel back in time for a second chance. Otherwise, lose your footing and you're back to square one.

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### **See also**

[Saving a game under a different name](#)

[Resuming a saved game](#)

**To save a game under a different name**

- 1 On the Game menu, click Save Game As.
- 2 Type a new filename.
- 3 Select the drive where you want to store the game.
- 4 Select the directory where you want to store the game.

To save a game using an existing filename, choose the name in the list or type the current name. When you click OK, you will need to confirm that you want to replace the existing game.

**To resume a saved game**

1 On the Game menu, click Resume Saved Game, or press CTRL+R.

2 Click the drive, folder, and filename of the game you want to play.

Action picks up where you left it. Any weapons you acquired are still onboard.

### To choose the level of difficulty

When you begin a game, you must choose the level of difficulty you want for your assignment. These are the Coalition's ratings:

<u>Level</u>	<u>Effect on mission assignment</u>
Easy	You fly with double-strength shields and a pulsating interference device so fewer enemy ships find you.
Normal	Your reputation draws increased enemy activity and twice the firepower that lesser pilots are exposed to.
Hard	Reputations can be deadly. More enemy ships than your nightmares can handle.
Furious	It's you versus the most aggressive war machines ever created. THEY decide if you're up to the task.

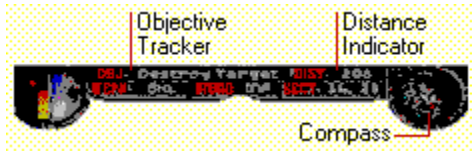
#### Tip

The Auto Leveler assists in keeping your ship parallel to the horizon. If you are an experienced pilot who loves a challenge, consider turning your ship's Auto Leveling system off. With it off, you can make sharper turns and take on the demands of total flight control. To turn Auto Leveling off, click Options, click Flight Controls, and then clear the Auto Leveling check box.



### To locate a target, checkpoint, or tunnel

- 1 Check the Objective Tracker to determine what you're looking for.
- 2 Maintain a 12 o'clock Compass heading.
- 3 As the Distance Indicator nears zero, get ready for action.



### Tip

The PLUS and MINUS SIGNS on the Compass indicate the position of targets, tunnels, checkpoints, and powerUps. Although many may not be mission-critical, they can significantly affect your career as a pilot. High-scoring pilots owe much to being thorough. To pause the game and study a [Satellite Map](#) that shows a larger geographical area, press TAB.

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### See also

[The Instrument Panel](#)

[Displaying or hiding the Satellite Map](#)

### **To pick up weapons**

The [Bions](#) have stolen the more valuable [Coalition](#) weapons. Some of the stolen [weapons](#) are stashed in subterranean spaces, and some are stored above ground in well-guarded locations.

When you destroy a Bion bunker, your stolen weapons are extracted and stored indefinitely for you in a floating weapons cache similar to the ones in the subterranean areas. Fly through a cache to:

- Upload new weapons
- Add ammo for onboard weapons

### **Tip**

When you pick up a weapons cache, the name of the weapon is displayed for a moment along with the key you press to activate the weapon. For example, if you harvest a Viper cache, the message reads: Vipers! (5).

---

### **See also**

[Selecting and firing a weapon](#)

## To select and fire a weapon

- 1 After you have picked up weapons in a powerUp, select the weapon you want to fire by pressing the key assigned to it.

<u>To activate</u>	<u>Press</u>
<u>ServoKinetic Laser (SKL)</u>	1
<u>Dispersion Cannon 14 (DC14)</u>	2
<u>Rapid-Fire Laser (RFL20)</u>	3
<u>Dead-On Missile (DOM)</u>	4
<u>Viper (VIP)</u>	5
<u>Bion Fury Missile (BFM)</u>	6
<u>F<sup>3</sup> (FFF)</u>	7

- 2 Press Button 1 on the joystick, or press SPACEBAR.

Your Weapon Readout indicates the active weapon. The Ammunition Inventory shows the quantity of the active weapon.

### Tips

- You begin your intergalactic journey with only one weapon -- a ServoKinetic Laser. The other six weapons are stored in secret caches underground or above ground in well-guarded locations.
- Lasers regenerate their own ammo. Missiles are finite; you'll have to scour the universe to find replacements. FFF bombs are a serious threat and a serious payload -- you can carry only one at a time, but one is more than enough.

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### See also

[Customizing keyboard settings](#)

[Customizing joystick settings](#)

[Picking up weapons](#)

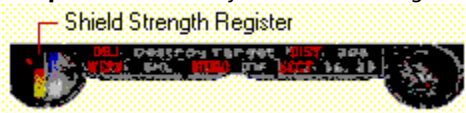
### To increase shield strength

Your ship identifies atmospheric energy fields and rechannels them into floating energy caches. Fly through a cache and watch for these messages:

<u>Message</u>	<u>Effect</u>
Shields Restored!	Full restoration of shield strength
Shield Boost!	Adds 25% to shield strength

If you locate an energy cache when your shields are close to full strength, your ship will not upload the cache. Note the coordinates of the cache's location. You can come back for it later when you need it.

**Important:** Watch your Shield Strength Register. When your shield strength is gone, so are you.



### Tip

Pilots who request Easy missions are issued ships with double-strength shields.

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### See also

[Choosing the level of difficulty](#)

### **To achieve temporary invincibility or invisibility**

Your ship identifies atmospheric energy fields and rechannels them into floating energy caches. Fly through them and watch for these messages:

<b><u>Message</u></b>	<b><u>Effect</u></b>
Invincibility !	30 seconds of total invincibility
Invisibility!	30 seconds of invisibility

#### **Tip**

A countdown timer appears in the lower-right corner of your screen for the 30 seconds that your ship is invisible or invincible.

---

#### **See also**

[Locating targets, checkpoints, and tunnels](#)

## To increase or decrease the ship's velocity

You can increase or decrease your ship's velocity using the joystick or the keyboard.

### Joystick method

<u>To</u>	<u>Press</u>
Increase throttle	Button 4 or Throttle Control
Decrease throttle	Button 3 or Throttle Control

### Keyboard method

<u>To</u>	<u>Pres s</u>
Increase throttle	A
Decrease throttle	Z

The [Velocity Register](#) indicates your relative speed.

---

### See also

[Activating Turbo Thrust](#)

[Customizing keyboard settings](#)

[Customizing joystick settings](#)

### **To activate Turbo Thrust**

- ▶ To activate [Turbo Thrust](#), press Button 2 on the joystick or press F on the keyboard.

Before you can use Turbo Thrust, you have to find the fuel by either:

- Picking up a hidden fuel cache in a subterranean space
- Retrieving stolen [Coalition](#) fuel from a well-guarded location.

Turbo Thrust provides an intense burst of speed for emergency situations. Use it as a defensive tactic for high-powered escapes. You cannot fire a weapon while it is engaged; all the ship's power is channeled into the propulsion and navigation system for the duration of the Thrust. Forget the trigger. Get a white-knuckle grip on something stable.

The [Ammunition Inventory](#) shows your fuel level during a Thrust.

### **Tips**

- ▶ Save a little Turbo fuel for use in tunnels, where timing, finesse, and a short but serious burst of speed can get you past a deadly trap.
- ▶ If you are scrutinizing the terrain for targets, tunnels, and powerUps, consider throttling down and using short bursts of Turbo Thrust if a blast of speed is needed. Not recommended for those prone to whiplash.

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### **See also**

[The Instrument Panel](#)

[Locating targets, checkpoints, and tunnels](#)

## To look out the cockpit windows

<u>To look</u>	<u>Press</u>
Left	INS
Right	DEL
Up	- (KEYPAD)

### Tips

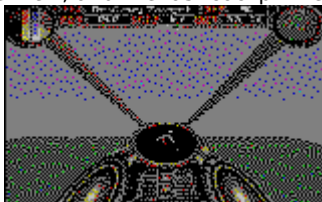
- ▶ If you can see the exterior of your ship on the screen, you are in Chase or Outside view and you can't look out the cockpit windows. To switch to a view where you can look out the cockpit windows, on the View menu, click Pilot View, and then click Cockpit.
- ▶ Thanks to a highly advanced visual guidance system, your tracking missiles will fire in the direction you are looking.



### To view your ship from outside

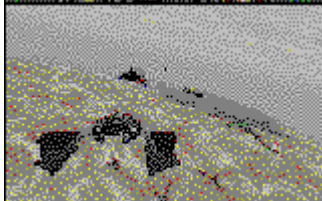
▶ On the View menu, click Pilot View, and then click Chase or Outside. Or press V repeatedly to cycle through Chase view, Outside view, and the last cockpit view you displayed.

Last cockpit view you displayed



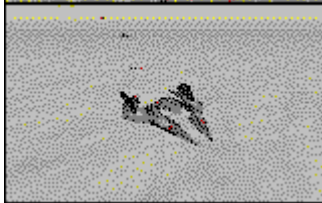
### Chase view

Gain more visibility to the left and right.



### Outside view

Change your point of view by panning up/down/left/right.



▶ In Outside view, you can pan around your ship by pressing the Hat Switch on your joystick, or by using the keyboard.

<u>To pan</u>	<u>Press</u>
Left/right	INS/DEL
Up/down	- / + (KEYPAD)
Center	PERIOD (.)

### To change the size of ▶ on the screen by hiding the menu bar

▶ To fill the screen with  
▶ and hide the task and menu bars, press F4. Press F4 again to display the bars. Full Screen format often makes the graphics appear smoother. There may be a momentary interruption in the screen display while  
▶ switches to or from Full Screen format.

### Tip

For faster action in Full Screen format, fly with a [Head-Up Display](#) or [No Instruments](#) instead of Full Cockpit. Use the View menu to choose your instrument display, or press C repeatedly to cycle through the displays.

---

### See also

[Changing the view to speed up game play](#)

**To customize keyboard settings**

- 1 On the Options menu, click Flight Control Options.
- 2 Click Customize Keyboard.
- 3 Click the item that you want to change.
- 4 Click Change.
- 5 On the list, click the key you want to use.

### **To customize joystick settings**

Your joystick must be calibrated before you can customize joystick settings.

- 1 On the Options menu, click Flight Control Options.
- 2 Make sure Joystick is chosen in the Primary Flight Control box.
- 3 Click Customize Joystick.
- 4 Click the item that you want to change.
- 5 Click Change.
- 6 Press the joystick button (other than the Hat Switch) that you want to use.

**To select a joystick, gamepad, or keyboard as primary flight control**

- 1 On the Options menu, click Flight Control Options.
- 2 In the Primary Flight Control box, click the device you prefer.

**Tip**

If you are using a Thrustmaster joystick, see the README for more information.

**To calibrate the joystick**

- 1 On the Options menu, click Flight Control Options.
- 2 Click the Calibrate button to open the Joystick Calibration dialog box.
- 3 Follow the instructions in the dialog box.

When the calibration is complete, you return to ▶ Primary Flight Control dialog box.

**To turn planet briefings on or off**

- 1 On the Options menu, click Game Options.
- 2 Click the Show Planet Briefings check box.

When Show Planet Briefings is checked, each new planet begins with a description of the planet and its targets.

**Tip**

During a planet briefing, you can skip to the next item in the briefing by pressing SPACEBAR, or you can leave the planet briefings and begin flight by pressing ESC.

---

**See also**

[Turning game videos on or off](#)

[Turning the flight demo on or off](#)

**To turn videos on or off**

- 1 On the Options menu, click Game Options.
- 2 Click the Show Videos check box.

When Show Videos is checked, ▶ displays cinematic footage from critical junctures on your journey. The videos include footage of your ship being launched from the mother ship and other clips from your ship's voyage through space.

**Tip**

Depending on the options you chose during Setup, the ▶ CD-ROM may need to be inserted in your CD-ROM drive to play the videos. If the CD-ROM is not inserted, ▶ skips the videos and continues with the game.

---

**See also**

[Turning planet briefings on or off](#)

[Turning the flight demo on or off](#)

**To turn the demos on or off**

- 1 On the Options menu, click Game Options.
- 2 Click the Show Demo When Idle check box.

If this option is checked and you go 30 seconds between games without touching the controls, ▶ begins a virtual flight pattern while searching for a human heartbeat. The flight pattern ends when you demonstrate signs of life, such as pressing a key or clicking New Game on the Game menu.

---

**See also**

[Turning game videos on or off](#)

[Turning planet briefings on or off](#)



**To increase game speed by decreasing graphic detail**

- 1 On the Options menu, click Graphics.
- 2 To increase game speed, choose a lower level of detail for the options. Experiment to find the balance you want between speed and graphic detail.

Your display is updated when you return to game play.

---

**See also**

[Changing the view to speed up game play](#)

[If the graphics have less detail than you would like](#)

**To adjust the volume of music and sound effects**

- 1 On the Options menu, click Sound Options.
- 2 In each volume box, click the volume level you want.

**Tip**

You can clear the Play Sound Effects check box or the Play Music check box to turn music or sound effects off entirely.

---

**See also**

[Muting the sound](#)

**To set the playback format for mono, stereo, or surround sound**

- 1 On the Options menu, click Sound Options.
- 2 In the Playback Format box, click the type of sound that matches your sound system.

**To mute the sound**

▶ On the Options menu, click Mute, or press CTRL+M.

Ah, the silence of deep space. To return the sound to its previous level, repeat the process.

**Tip**

Music and sound effects can be turned off independently of each other. On the Options menu, click Sound Options, and then clear the check box of the item you do not want.

---

**See also**

[Adjusting sound volume](#)

### **To display the high score**

▶ On the Game menu, click High Score.

▶ displays the high scores next to the call signs of pilots from past missions -- a Coalition Hall of Fame.

All hits are valued equally. Air and ground targets are worth 100 points each, and "green" targets (palm trees and seaweed) are counted against you -- 100 points off for each.

The inspirational message is written by the all-time best pilot.

---

### **See also**

[Scoring and levels of difficulty](#)

### To change the instrument display

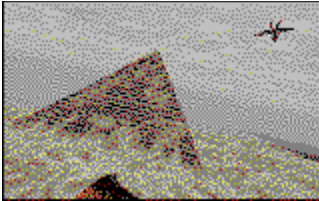
- ▶ On the View menu, click Instrument Display, and then choose the display you prefer.

Full Cockpit



Head-Up Display

▶ No Instruments



### Tip

You can press C repeatedly to cycle through these displays.

---

### See also

[Views, overview](#)

[The Instrument Panel](#)

[Viewing your ship from the outside](#)

### **To display or hide the crosshairs**

The crosshairs are your sighting device. You can hide them for totally unobstructed flight, and then display them again when you want total accuracy in battle.

- ▶ Press X to toggle the crosshairs on or off.

### To play the bonus soundtracks

The ► CD provides five soundtracks in addition to the music for the game. These five bonus tracks can be played on any standard CD player. Always turn down the volume of your CD player before inserting a disc.

Track 1	<b>Caution:</b> Track 1 is not intended for audio playback. It contains game data only.
Track 2	Overture
Track 3	Sebek
Track 4	Ares
Track 5	Fury
Track 6	Premonition

### Pilot Registration dialog box

#### Pilot Call Sign

Type the name you want to be known by when you fly for the Coalition -- the name you want to see at the top of the high-score list.

#### Difficulty Level

Establishes how difficult a mission you will fly. You must finish out your assignment on this level. To request a different level of difficulty, you must start a new game. These are the Coalition's ratings:

<u>Level</u>	<u>Effect on mission assignment</u>
Easy	You fly with double-strength shields and a pulsating interference device so that fewer enemy ships find you.
Normal	Your reputation draws increased enemy activity and twice the firepower that lesser pilots are exposed to.
Hard	More enemy ships than your nightmares can handle.
Furious	It's you versus the most aggressive war machines ever created. THEY decide if you're up to the task.

### Game Options dialog box

#### Show Planet Briefings

Provides reconnaissance on a planet and its missions during the introduction to each new planet.

#### Show Videos

Displays the introductory launch sequence from the mother ship and cinematic sequences between game levels. If you chose the Compact installation option, the ► CD-ROM must be inserted in the CD-ROM drive to run the cinematic sequences. If the CD-ROM is not inserted, ► omits the videos and continues with game play.

#### Show Demo When Idle

Displays a virtual flight pattern when you are not in a game. The flight pattern ends when you press a key or click



New Game on the Game menu.

### **Graphics Options dialog box**

Adjust the detail of each setting lower to increase game speed, or higher for the best-looking graphics.

#### **Shadow Detail**

Displays the shadows of all ships in the air. Shadows can be useful for judging your own altitude or for spotting enemy aircraft lurking behind you. Choose None if you are afraid of your own shadow -- or want faster game play.

#### **Image Quality**

Choose higher image quality for more realistic texture mapping and a sharper image.

#### **Texture Detail**

The higher the detail, the more elegant the landscape.

#### **Debris**

Controls the amount of flying debris from destroyed targets. Choose from these options:

- Off:** Direct hits create a compact implosion that is faster to fly through.
- Normal**  
**:** Direct hits create your average explosion with just enough debris to confirm the hit.
- Overkil**  
**I:** Direct hits create serious explosions that can light up a dark planet but tend to slow your flight.

#### **Show Sky Texture**

If this option is not checked, the sky is a solid color without clouds.

**Sound Options dialog box****Play Sound Effects**

Plays explosions, crashes, and other sound effects during a game.

**Play Sound Effects Volume**

Adjusts the volume of explosions, crashes, and other sound effects during a game.

**Play Music**

Plays background music during a game.

**Play Music Volume**

Adjusts the volume of the background music during a game.

**Playback Format**

Sets the playback format to mono, stereo, or surround sound.

**Advanced button**

During Setup, ► estimates settings for playing sound on your computer's sound card. You can click the Advanced button to view and adjust the settings if you need to troubleshoot a sound problem.

**Advanced Sound dialog box**

To eliminate clipped or choppy sound or improperly timed sound effects, experiment first with the number of buffers, and then with the buffer length. Use the Test button to apply the settings and hear the result. See the README for more information about buffer size and number of buffers for specific cards.

**Buffer Length**

Increase slightly to smooth out clipped or choppy sound. Decrease slightly if sound effects seem delayed.

**Number of Buffers**

Increase slightly to smooth out clipped or choppy sound. Decrease slightly if sound effects seem to last too long.

**Default button**

Restores the settings that estimates for your sound card.

**Test button**

Applies the settings so you can evaluate the results.

## **Save Game As dialog box**

### **File Name**

To save a game with a new name, type a new filename.

To save a game using an existing filename, choose the name in the list or type the current name. When you click OK, ► asks if you want to replace the existing game.

A Windows 3.1 filename can contain up to eight characters, plus the .FFF extension.

### **Drives**

Choose the drive where you want to store the game.

### **Directories**

Choose the directory where you want to store the game.

### **Flight Control Options dialog box**

Allows you to select your primary method of controlling your ship. If necessary, you can also calibrate your joystick. If you want to change flight control settings, click the Customize Keyboard or Customize Joystick button.

#### **Primary Flight Control**

Determines your primary method of maneuvering your ship and firing weapons.

#### **Calibrate button**

Opens the Joystick Calibration dialog box, where you can calibrate the joystick for accuracy in maneuvering the ship. Your joystick must be calibrated before you can customize joystick settings.

#### **Customize Keyboard button**

Opens the Customize Keyboard dialog box, where you can view and change the current keyboard functions of ▶.

#### **Customize Joystick button**

Opens the Customize Joystick dialog box, where you can view and change the current joystick button settings. Your joystick must be calibrated before you can customize joystick settings.

#### **Tips**

- ▶ Before you can customize your joystick settings, you'll need to calibrate your joystick by clicking Calibrate.
- ▶ The keyboard controls always work, regardless of any other selection you make.

### Customize Joystick dialog box

To change a joystick button setting, choose the item you want to change from the Joystick Settings list, and then click Change. To return customized joystick settings to their default settings, click Default. Your joystick must be calibrated before you can customize joystick settings.

### Joystick Settings

Lists current settings for the joystick buttons that you can change.

#### Change button

Opens the Change Joystick Button Setting dialog box where you assign the selected item to a different joystick button.

#### Default button

Resets joystick buttons to the following settings:

<u>Button</u>	<u>Default setting</u>
1	Fire weapon
2	Turbo Thrust
3 (if available)	Decreases throttle
4 (if available)	Increases throttle
Throttle Control (if available)	Adjusts throttle
Hat Switch (if available)	In <u>Full Cockpit view</u> : Looks out cockpit windows  In <u>Outside view</u> : Pans left, right, up, down

### Customize Keyboard dialog box

To change a keyboard setting, click the item you want to change, and then click Change.

To restore keyboard settings to the following defaults, click Default.

<u>To</u>	<u>Press</u>
Increase/decrease throttle	A/Z
Bank left/right	▶ ▶
Nose up/down	▶ ▶
Roll left/right	HOME/PAGE UP
Fire weapon	SPACEBAR
Turbo Thrust	F

### Restore All Settings dialog box

**If you are currently changing keyboard settings**

To leave keyboard settings as they currently are, click No.

To return all keyboard settings to the following defaults, click Yes.

Default Keyboard Settings:

<u>To</u>	<u>Press</u>
Increase/ decrease throttle	A/Z ▶ ▶ ▶ ▶
Bank left/right	HOME/PAGE
Nose up/down	UP
Roll left/right	SPACEBAR
Fire weapon	F
Turbo Thrust	

#### **If you are currently changing joystick settings**

To leave joystick settings as they currently are, click No.

To return all joystick settings to the following defaults, click Yes.

Default Joystick Settings:

<u>Button</u>	<u>Default setting</u>
1	Fire weapon
2	Turbo Thrust
3 (if available)	Decreases throttle
4 (if available)	Increases throttle

#### **Change Joystick Button Settings dialog box**

Pressing a button on the joystick now replaces the button's current function with the function you chose in the Joystick Settings list.

To leave the joystick button setting as it is, click Cancel.



**Change Key Setting dialog box**

Choose a key from the dropdown list to replace the key's current function with the function you chose in the Keyboard Settings list.

To leave the key setting as it is, click Cancel.

### **Resume Saved Game dialog box**

To resume a game that you've saved, choose the drive and directory where it is stored, and then choose the filename of the game. Click the Find File button if you are not sure where the game is stored.

#### **Dialog Box Options**

##### **File Name**

Choose or type the name of the game you want to play.

##### **Drives**

Choose the drive that contains the game you want to play.

##### **Directories**

Choose the directory that contains the game you want to play.

##### **Find File button**

Opens the Find File dialog box so that you can search for saved ▶ games.

## **Targets**

Some of the targets you need to destroy are none other than the inventions of bionic warrior insurgents, whose aim is to rule the Coalition and control all of space. These targets may look innocent... but don't be fooled. For example, the Grim Reaper is distinguished by its ability to think as well as fly, and was the first Bion fighting ship invented.

Other targets were originally Coalition inventions, but have now been co-opted by the Bions to do no good. For instance, Scarab Fighters were used to protect Sebekian caravans transporting precious alloys and gems. Now they're being used for evil purposes by the Bions.

The message of all this is simple: destroy or be destroyed.

---

## **See also**

[Locating targets, checkpoints, and tunnels](#)

## **Enemies**

During the IP Wars, the Terrans designed a race of bionic warriors known for their cunning and their brutal strength. Physically superior and ruthlessly aggressive, a single troop of Bions could eliminate the inhabitants of a planet within days.

The Bion war effort saved the Coalition, but nearly destroyed Terran. After the war, Bion aggression could not be contained. Peaceful coexistence between Bions and Terrans proved impossible. The ensuing Bion Wars are known for their brevity -- and violence.

In 2832, the Coalition ordered complete Bion dismantlement and instituted Terran's renowned Council of Peace -- a military defense force inferior to none....Unknown to the Coalition, a few Bions survived and assembled on a distant planet called Fury.

The Bion plan is to seize seven more Coalition planets whose resources will help them attain their ultimate goal -- total domination of space from the Bion Fury outpost. As a member of Terran's Council of Peace, it's your mission to stop them.

---

## **See also**

[Locating targets, checkpoints, and tunnels](#)

## Weapons

Your ship can hold seven weapons but you begin with only one, the ServoKinetic Laser. You'll never run out of ammo for the SKL, but you're going to need more firepower to eliminate the adversaries ahead. You must capture the other six weapons during battle or locate them in subterranean spaces.

Once you find a weapon, you choose it by pressing the key shown below.

<b>Pres</b>	<b>To activate</b>
<b>S</b>	
1	<b>ServoKinetic Laser (SKL)</b> A direct-fire laser known as 'the Serv.' Always available. Always dependable.
2	<b>Dispersion Canon 14 (DC14)</b> Fires in a spray pattern and is good for strafes. Even more powerful than the Serv.
3	<b>Rapid-Fire Laser (RFL20)</b> The twentieth iteration of the most powerful direct-fire laser.
4	<b>Dead-On Missile (DOM)</b> This missile shoots straight ahead. Aim carefully and don't look back.
5	<b>Viper (VIP)</b> Its infrared will track any visible target. Guaranteed!
6	<b>Bion Fury Missile (BFM)</b> Faster and more powerful than the Viper, with an incomparable tracking system. These babies do major damage.
7	<b>F<sup>B</sup> (FFF)</b> The most deadly triple-stage Smart Bomb destroys everything within range, including palm trees and seaweed. Restores shields automatically and has an IQ of 2000, better than yours.

### Tip

When you locate a weapon powerUp, the name of the weapon is displayed for a moment along with the key you press to activate the weapon. For example, if you harvest a Viper powerUp, the message reads: Vipers! (5).

---

### See also

[Picking up weapons](#)

[Selecting and firing a weapon](#)

[Hiding or displaying the crosshairs](#)

## **The planets**

Eight planets in the Coalition are overrun by bionic evil. Your journey begins on Terran and ends -- one way or the other -- on Fury.

### **Terran**

Terran wasn't always a utopia.

Ravaged by the IP Wars and then by the Bion Wars, Terran's peace has been hard-earned. And now the Bions have returned....

### **L24-D**

L24-D contains the largest repository of carbonium, an explosive with 48 times the power and damage of the fusion bomb. The Bions want it for their perilous missile, the BFM.

### **Ares**

The isomorphic decay of Aresian red sheol attracts wormholes -- shortcuts through space and time. The Bions plan to mine the sheol, control the wormholes, and monopolize all intergalactic travel.

### **New Kroy**

New Kroy is a city planet that's reputed to be impenetrable. Its buildings are grown from polyKroy, an organic synthetic that is transparent, grows into any shape, and is nearly indestructible.

### **Sebek**

According to ancient Sebekian scriptures, the Death Ankh grants its possessor immortality. Seize it before the Bions do! You don't want an enemy that you can't kill....

### **Vestra**

Once the penal colony for bionic insurgents, Vestra is now the Bions' military training ground. They've recruited their most ruthless fighters, Councilor. They want you dead!

### **Tiamat**

Tiamat's oceans contain the last repositories of attainable phosphorous (P), a fundamental energy source in all living and bionic things. Without access to Tiamat's waters, the Bions will die.

### **Fury**

Fury is the Bion deep space outpost. Destroy this planet and you'll defeat the Bion threat! At least for now....

---

### **See also**

[Moving to the next planet](#)

## **Tunnels**

The [Bions](#) have built strongholds deep within each planet. If you survive flying into one, you have the opportunity to make strikes that are important to the [Coalition](#).

Be forewarned that tunnels are especially dangerous. Radio communications cannot reach the Coalition. Once you enter a tunnel, you're on your own until you exit. Your request to save will not be heard.

Tunnel entrances are often camouflaged. Battle hard and keep careful watch. The greater the danger, however, the greater the reward.

### **Tips**

- ▶ Once you've found Turbo Thrust fuel, save a little for use in tunnels, where timing, finesse, and a serious burst of speed can get you past a deadly trap.
- ▶ You cannot display the [Satellite Map](#) within a tunnel. Consider displaying the Satellite Map when you exit a tunnel to study your new position in relation to targets and powerUps.

---

### **See also**

[Locating targets, checkpoints, and tunnels](#)

[Displaying or hiding the Satellite Map](#)

[Activating Turbo Thrust](#)

## The Instrument Panel

Click on the graphic below to learn more about your ship's Instrument Panel.



### Tip

Experienced pilots use the shadow of their own ship to judge their altitude over a planet's surface.

---

### See also

[Changing the instrument display](#)

[Displaying or hiding the Satellite Map](#)

[Locating targets, checkpoints, and tunnels](#)

[Picking up weapons](#)

[Selecting and firing a weapon](#)

[Hiding or displaying the crosshairs](#)

[Increasing shield strength](#)

[Increasing or decreasing velocity](#)



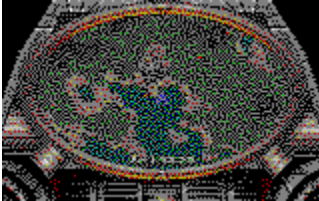
**Location Coordinates**

The Location Coordinates indicate your current position within a sector. This is important to note when you think you may want to return to a site for further exploration, or when you want to pass along information to pilots who may follow in your footsteps...so to speak.

## Satellite Map

The Satellite Map displays a larger geographical area than the [Compass](#). Use the Compass to locate a mission-critical target, then use the Satellite Map to locate other targets and tunnels in remote locations. History demonstrates that high-scoring pilots owe much to these detours.

Press TAB to display or hide the Satellite Map. The symbols on the Map are different than those on the Compass, but the colors have the same meaning. Air targets pulsate yellow to red to make them visible over maps of red planets.



### Tip

Your ship is hidden in a security timewarp as soon as you display the Satellite Map. Take your time. Your disappearance only frustrates the [Bions](#).

---

### See also

[The Instrument Panel](#)

**Objective Tracker**

Programmed by Coalition headquarters, this instrument locks in on the next major objective in your mission, whether it's destroying an enemy target, entering or exiting a tunnel, or hightailing it to a Jump Zone for a slick planetary exit.

**Distance Indicator**

The Distance Indicator compares your current position to that of your next major objective and shows your progress -- or retreat.

Bion hits can knock your ship off course. Keep an eye on the Compass and the Distance Indicator. When the Indicator nears "0," be ready for action.

**Weapon Readout**

Indicates the ever-ready, ever-reliable ServoKinetic Laser until you press keys 2-7 to change your active weapon. The other six weapons are hidden in subterranean spaces or stored in well-guarded locations.

**Ammunition Inventory**

Indicates the strength of your active weapon or the amount of ammunition you have onboard. Also indicates the amount of Turbo fuel remaining when you engage Turbo Thrust.

### **Shield Strength Register**

(yellow register on the left)

The all-important gauge!

Enemy hits and reckless driving drain your shield strength. When the Shield Strength Register runs out, it's good-bye galactic adventure. You'll need a powerUp or a hiding place to survive. And there are NO hiding places.

Fly like a fiend if you must, but aim well. The Bions can do a lot more damage to your ship than you can.

### **Velocity Register**

(blue register on the right)

Indicates current speed. The register is unable to indicate the ferocious Turbo Thrust velocity, but at that speed you won't be reading gauges anyway.

## Location Coordinates

The Location Coordinates indicate your current position within a sector. This is important to note when you think you may want to return to a site for further exploration, or when you want to pass along information to pilots who may follow in your footsteps...so to speak.

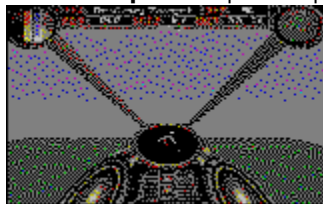




### Compass and Micro-Map

In Full Cockpit view, the Compass and Micro-Map are displayed separately. In Head-Up Display, the Compass is superimposed over the Micro-Map.

**Full Cockpit:** Compass displays targets; Map displays tunnels and powerUps.



**Head-Up Display:** Compass superimposed over Map to show targets, tunnels, and powerUps.

### Compass and Micro-Map

A wealth of information. The next mission-critical target or checkpoint is always straight up at 12 o'clock. The Compass displays a red triangle when you are headed toward the next mission-critical target or checkpoint. The arrow rotates to reflect your current heading. The plus and minus signs indicate the following items in your immediate area.



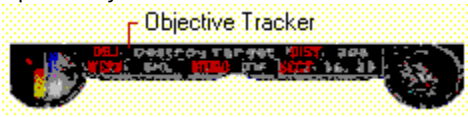
<u>Symbol</u>	<u>Meaning</u>
Red	Air target
Green	Ground target
Yellow	Tunnel entrance
Blue	PowerUp
+	Object is above you
-	Object is below you

### Tips

- ▶ The Compass leads you to mission-critical targets. The Satellite Map covers a larger geographical area and is useful for planning detours to tunnels and other optional targets. Press TAB to pause the action and display the Satellite Map.
- ▶ If you are flying upside down, ground and air symbols appear on your Compass and Micro-Map as mirror images of their actual positions.

## Objective Tracker

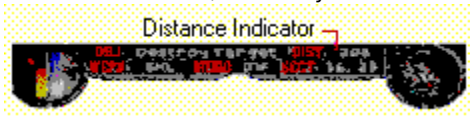
Programmed by Coalition headquarters, this instrument locks in on the next major objective in your mission, whether it's destroying an enemy target, entering or exiting a tunnel, or hightailing it to a Jump Zone for a slick planetary exit.



## Distance Indicator

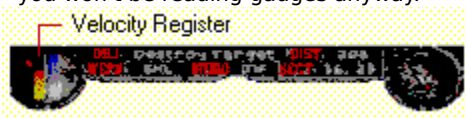
The Distance Indicator compares your current position to that of your next major objective and shows your progress -- or retreat.

Bion hits can knock your ship off course. Keep an eye on the Compass and the Distance Indicator. When the Indicator nears "0," be ready for action.



## Velocity Register

Indicates current speed. The register is unable to indicate the ferocious Turbo Thrust velocity, but at that speed you won't be reading gauges anyway.



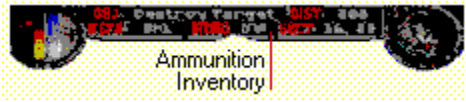
## Weapon Readout

Indicates the ever-ready, ever-reliable ServoKinetic Laser until you press keys 2-7 to change your active weapon. The other six weapons are hidden in subterranean spaces or stored in well-guarded locations.



### Ammunition Inventory

Indicates the strength of your active weapon or the amount of ammunition you have onboard. Also indicates the amount of Turbo fuel remaining when you engage Turbo Thrust.



### **Shield Strength Register**

The all-important gauge!

Enemy hits and reckless driving drain your shield strength. When the Shield Strength Register runs out, it's good-bye galactic adventure. You'll need a powerUp or a hiding place to survive. And there are NO hiding places.

Fly like a fiend if you must, but aim well. The Bions can do a lot more damage to your ship than you can.

## Views, overview

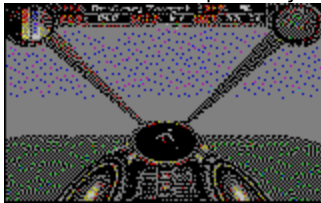
The way you view your ship -- and battle itself -- is up to you. Choose the view of battle that you want, and then choose the way you want your instruments displayed. All choices are available on the View menu; shortcut keys are listed here.

### Full Cockpit

If having a little metal around you makes you feel more secure, this view is for you.

It also presents intense maneuvering challenges as you must really fly the ship to spot Bion targets.

▶ Press C repeatedly until this view is displayed.



### Head-Up Display

Flight information is still readily available, but your view of the action is greatly expanded.

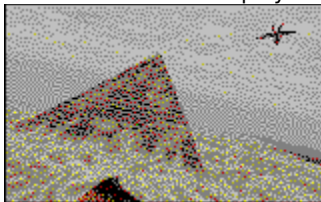
▶ Press C repeatedly until this view is displayed.

### No Instruments

Total freedom -- just you and the crosshairs. (And you can even get rid of them if you want to.)

▶ Press C repeatedly until all instruments are hidden.

▶ To hide or display the crosshairs, press X.



### Tip

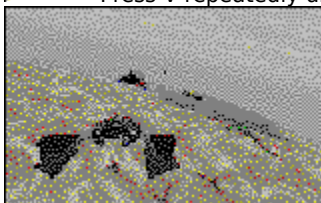
For a quick readout of your current weapon, your current objective, and your next objective, press BACKSPACE.

### Chase

Experiencing some ergonomic issues in the cockpit? Want to feel like you're water-skiing behind a supersonic fighter?

Chase View gives you a 180-degree view of the action with your ship dead center. And you can tan in the glow of the afterburner.

▶ Press V repeatedly until this view is displayed.



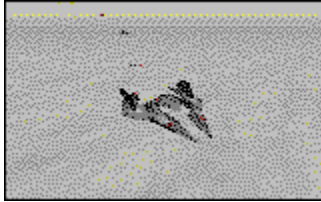
### Outside

Escape the confines of the cockpit and survey your ship from any angle you choose.



- ▶ To switch to Outside view, press V repeatedly.
- ▶ To pan up/down/left/right, use the Hat Switch on your joystick. Or:

To pan	Press
Up/down	- / + (KEYPAD)
Left/right	INS/DEL
Center	PERIOD (.)



### Full Screen

As much game as will fit on the screen -- the menu and taskbars are hidden and the action stretches edge to edge. Choose this format for a smoother graphic display.

- ▶ Press F4 to display or hide Full Screen format.

### Panoramic format

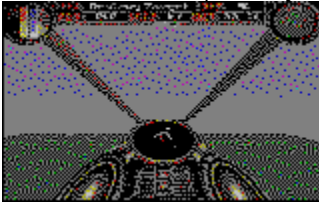
Also known as letterbox format, this view gives you the fastest action possible.

- ▶ Press [ ] (bracket keys) to switch between Panoramic and Full Screen formats.
- ▶ Press C repeatedly to cycle through the instrument displays.
- ▶ Press V repeatedly to cycle through the pilot views.

### **Full Cockpit**

If having a little metal around you makes you feel more secure, this view is for you.

It also presents intense maneuvering challenges as you must really fly the ship to spot Bion targets.  
Press C repeatedly until this view is displayed.



## **Head-Up Display**

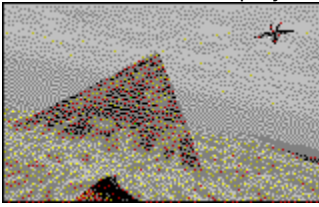
Flight information is still readily available, but your view of the action is greatly expanded.

▶ Press C repeatedly until this view is displayed.

### No Instruments

Total freedom, just you and the crosshairs. (And you can even get rid them if you want to.)

- ▶ Press C repeatedly until all instruments are hidden.
- ▶ To hide or display the crosshairs, press X.



### Tip

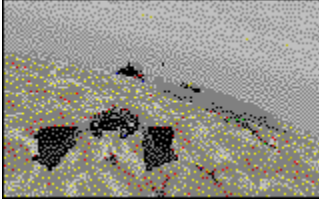
For a quick readout of you current weapon, your current objective, and your next objective, press BACKSPACE.

### **Chase view**

Experiencing some ergonomic issues in the cockpit? Want to feel like you're water-skiing behind a supersonic fighter?

Chase View gives you a 180-degree view of the action with your ship dead center. And you can tan in the glow of the afterburner.

▶ Press V repeatedly until this view is displayed.

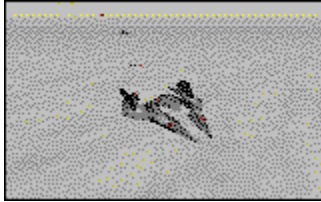


## Outside view

Escape the confines of the cockpit and survey your ship from any angle you choose.

- ▶ To switch to Outside view, press V repeatedly.
- ▶ To pan up/down/left/right, use the Hat Switch on your joystick. Or:

To pan _____	Press _____
Up/down	- / + (KEYPAD)
Left/right	INS/DEL
Center	PERIOD (.)



**Full Screen**

As much game as will fit on the screen -- the menu and task bars are hidden and the action stretches edge to edge. Choose this format for a smoother graphic display.

▶ Press F4 to display or hide Full Screen format.

### **Panoramic format**

Also known as letterbox format, this view gives you the fastest action possible.

- ▶ Press [ ] (bracket keys) to switch between Panoramic and Full Screen formats.
- ▶ Press C repeatedly to cycle through the instrument displays.
- ▶ Press V repeatedly to cycle through the pilot views.



**If you don't hear any sound**

- ▶ The Mute command may be selected.
  - ▶ You may need to increase the volume in the Sound Options dialog box.
  - ▶ The volume may be turned down on your speakers or headphones.
- 

**For details, see**

[Muting the sound](#)

[Adjusting sound volume](#)

[If the sound seems clipped, or the sound effects are delayed](#)

**If the sound seems clipped, or the sound effects are delayed**

- 1 On the Options menu, click Sound Options.
  - 2 Click the Advanced button.
  - 3 If the sound is choppy or clipped, increase the number of buffers slightly. If there is a delay in the sound effects, decrease the number of buffers slightly.
  - 4 Click Test to apply the new settings and hear the results.
  - 5 If the sound is still clipped, increase the buffer length slightly, and then click Test.
  - 6 Continue to experiment until the sound is smooth and timed appropriately.
- You can always restore ► original sound settings by clicking the Default button.

**Tip**

If you decrease the buffer length too much, the sound will seem choppy.

**If the graphics have less detail than you would like**

- 1 On the Options menu, click Graphics Options.
- 2 Choose a higher level of quality or detail for each option. Experiment to find the balance you want between speed and graphic detail.

The less detail you display, the faster the flight.

**If your monitor display setting is higher than 256 colors**

You will achieve optimal performance if you run in 256 colors. If you run in higher color modes, you may experience severe performance degradation. To change monitor display settings in Windows 95:

- 1 Double-click the My Computer icon, then double-click Control Panel.
- 2 Double-click Display.
- 3 Click the Settings tab.
- 4 In the Color Palette box, click 256 Color, and then click OK.

To change monitor display settings in Windows 3.1:

- 1 In Program Manager, double click the Main icon.
- 2 Double-click Windows Setup.
- 3 On the Options Menu, click Change System Settings.
- 4 In the Display box, click the driver that contains 256 colors, and then click OK.

**If the graphics are not as smooth as you would like**

Switch to

- ▶ Full Screen format by pressing F4. (There may be a momentary interruption in the screen display while switches into or out of Full Screen format.)

- or -

- ▶ Panoramic format by pressing [ ] (bracket keys).

### **If game play is slower than you would like**

Here's how to get the fastest flight possible:

- ▶ Switch to Panoramic format.
  - ▶ Display less graphic detail as you fly.
  - ▶ Hit the throttle!
- 

### **For details, see**

[Changing the view to speed up game play](#)

[Increasing game speed by decreasing graphic detail](#)

[Increasing or decreasing velocity](#)

### **If the ship's instruments are not displayed**

"No Instruments" is one of ► instrument displays. (Hiding the instruments provides faster action and a more expansive view than other displays.)

► To display the ship's instruments, click Instrument Display on the View menu, and then click Full Cockpit or Head-Up Display.

#### **Tip**

You can cycle through the instrument displays -- Full Cockpit, Head-Up Display, and No Instruments -- by repeatedly pressing C.

### **If the cockpit is not displayed**

Displaying the cockpit can be a one or two-step process, depending on the view you currently have displayed and the way you want to display the cockpit instruments.

- 1 If you can see the outside of your ship, you have Chase view or Outside view displayed. To display a cockpit view, on the View menu, click Pilot View, and then click Cockpit. You can also press V repeatedly until you no longer see the outside of your plane.
- 2 There are three ways to display cockpit instruments: Full Cockpit, Head-Up Display, and No Instruments. To choose the one you want, on the View menu, click Instrument Display, then click the display you prefer. You can also press C repeatedly to cycle through the displays.



**If the joystick does not function correctly**

- ▶ You may need to calibrate the joystick.
- ▶ The joystick buttons may have been assigned customized functions.
- ▶ If you are using a Thrustmaster joystick, see the README for more information.

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**For details, see**

[Calibrating the joystick](#)

[Customizing joystick settings](#)

**If ▶ displays a message asking for the CD-ROM**

The cinematic sequences are not copied from the CD-ROM during Typical Setup or Compact Setup. You'll need to insert the disc to see the footage.

▶ To skip the cinematic sequences, on the Options menu, click Game Options. Make sure the Show Videos check box is cleared.

The videos include footage of your ship being launched from the mother ship and other clips from your ship's voyage through space.

**If the keyboard does not work as expected**

- ▶ You may be using the + and - on the keyboard instead of on the keypad.
- ▶ Remember that the arrow keys are mapped like a joystick. Pressing the UP ARROW is like pushing a joystick forward: it pushes the nose of your ship down. Pressing the DOWN ARROW key is like pulling the joystick back: it pulls the nose of your ship up. You can easily customize these keyboard settings.
- ▶ You may be using DECIMAL POINT on the keypad instead of PERIOD (.) on the keyboard.
- ▶ The functions of the keys may have been customized. You can return them to the default settings, or customize the settings yourself.

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**For details, see**

[Customizing keyboard settings](#)

**If the + and - keys don't work**

- ▶ Make sure you are using the + and - keys on the keypad (not the keyboard).
- 

**For details, see**

[Customizing keyboard settings](#)

**If you are flying upside down and don't want to be**

Pull the nose of your ship up and hold it there until you are right-side up. Or, press HOME for a barrel roll. (If you hold HOME down too long, the airsick bag is in the glove compartment.)

Your ship has an Auto Leveler that assists in keeping you parallel to the horizon. If you are an experienced pilot who loves a challenge, consider turning your ship's Auto Leveling system off. With it off, you can make sharper turns and take on the demands of total flight control. To turn Auto Leveling off, click Options, click Flight Controls, and then clear the Auto Leveling check box.

## Tips

- ▶ If your shield strength is getting dangerously low (and low is definitely dangerous), check your Compass for a blue symbol. Blue indicates a powerUp and should be your first priority.
- ▶ When you spot the entrance to a tunnel, immediately note its coordinates. If enemy ships succeed in keeping you out, you'll have an easier time locating it on a second try.
- ▶ When you need to return to a target, tunnel, or powerUp, remember that you can press TAB to pause the action and study the Satellite Map.
- ▶ Experienced pilots use the shadow of their own ship to judge their altitude over a planet's surface.
- ▶ You get the fastest game play in Panoramic format and you still have the full range of instrument displays and pilot views. Switch in or out of Panoramic format by pressing [ ] (bracket keys).
- ▶ Need to minimize the game quickly? Press ALT, SPACEBAR, N to pause the game and minimize.
- ▶ You can't always avoid disaster, but you can buy yourself a second chance. Press CTRL+S to save the game BEFORE the trouble becomes terminal. Save when you approach especially risky situations and after achieving major targets. It is especially important to save before you enter subterranean spaces; you cannot save while you are underground.
- ▶ For a slick, quick, evasive maneuver and a cheap thrill, try rolling left or right by pressing HOME or PAGE UP.
- ▶ When the Objective Tracker indicates a Jump Zone, you need to stay alert for the Jump Zone AND for targets you want to hit before exiting the planet. For a better score, steer clear of the Jump Zone until you've taken care of all possible targets in the area. Once you fly over a Jump Zone, you're gone -- unfinished business or not.
- ▶ Speaking of evasion, Turbo Thrust (once you find the fuel) is for impatient pilots -- those who'd rather smell the fumes than the roses. Consider saving it for defensive maneuvers, or for a short burst of speed to get around a trap in a tunnel. Watch your Ammunition Inventory to monitor Turbo fuel level during a Thrust.

## **Glossary**

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Ares

-- B --

Bion Fury Missile (BFM)

Bion Walkers

Bion Wars

Bions

BioX-C23

BY2 Ship

-- C --

Carbonium

Coalition of Independent Planets

Council of Peace

-- D --

Dead-On Missile (DOM)

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Dispersion Cannon 14 (DC14)

-- F --

Fury

Fury

--G--

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-- I --

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Wormholes

-- X --

X2 Crane



**Anti-attack batteries** are standard Bion defense artillery that fire continuously unless destroyed.

**Ares** contains a unique mineral in its topsoil known as red sheol. The isomorphic decay of this mineral attracts wormholes -- shortcuts through space and time. Because of its numerous wormholes, Ares is known as the "gateway to deep space."

During the IP Wars, Ares closed its wormholes for strategic purposes; the planet hoped to deter anti-Coalition forces attempting to control intergalactic travel. The Aresian wormholes were reopened in 2832 as part of Terran's negotiations with the Council of Peace.

Ares is the second planet in the fifth galaxy.

The **Bion Fury Missile (BFM)** is a Super Missile first developed by the Bions during the IP Wars. The BFM's primary activator is carbonium, a highly volatile ore that is mined from planet L24-D. Carbonium explodes with 48 times the power and radiation damage of a fusion bomb. One BFM is often all a pilot needs to get the job done.

Use of the BFM was banned by the Council of Peace in 2832, after the Bion Wars. Evidence of its usage still exists, however, especially within the first galaxy, near planet Fury. If a Coalition pilot were to come into contact with a BFM, the missile would be activated by pressing key number 6.

The **Bions**, c. 2486 - 2832, were a race of bionic warriors the Terrans designed for military use during the IP Wars. The Bions were physically superior and programmed to be ruthless. After the IP Wars, Bion aggression could not be contained, and peaceful coexistence between Bions and Terrans proved impossible.

In 2832, the newly founded Council of Peace halted further Bion development and ordered Bion dismantlement. The Bions are assumed to be an extinct warrior class.

**Bion Walkers** once made up the standard Bion ground-attack force. During the IP Wars, Bion Walkers destroyed nearly one-fifth of the anti-Coalition population. Walkers have supreme endurance and fighting power. Some were known to survive numerous laser hits.

Production of Bion Walkers was halted in 2832. All remaining Walkers are believed to have been dismantled upon order of the Council of Peace.

**Bion Wars** 2829 - 2832. The Bions were a race of superior bionic warriors that the Terrans designed for military use during the IP Wars. After the IP Wars ended, Bion aggression could not be contained. Peaceful coexistence between Bions and Terrans proved impossible, resulting in the Bion Wars. In 2832, the Council of Peace, founded by the Coalition of Independent Planets, intervened and ordered complete Bion dismantlement. The Bions are now assumed to be an extinct warrior class.

The conflict between the Terrans and Bions is noted for its brevity and extreme violence. For further reading, please see Yasmine Craigtom Kastner's *The Bion Wars: A Terminal Reality* (Terran: IP Press, 2837).

The **BioX-C23** was the most prized Bion fighter ship during the IP Wars. After the Council of Peace ordered Bion dismantlement in 2832, development of the BioX-C23 was halted.

The last known BioX-C23 was used to transport all Bion insurgents from Terran to the Bion penal colony on Vestra. Pilots traveling near Vestra claim they have seen evidence of the famous fighting ship, but these rumors have never been substantiated.

The **BY2 Ship** was first built in 2811 and originally used to transport Arean red sheol. Grown from polyKroy, an organic mineral found only on the planet New Kroy, the BY2 is one of the few carriers that can withstand repeated wormhole travel. When Ares closed its wormholes during the IP Wars, the Areans reconfigured the BY2 and made it into one of the most durable fighting ships around. A few are still in existence today.



**Carbonium** is an ore composite found exclusively on the planet L24-D. Coalition of Independent Planets studies have shown that carbonium explodes with 48 times the power and radiation damage of the fusion bomb. Carbonium is also the primary activator in the Bion Fury Missile (BFM). Because of carbonium's highly volatile molecular structure, the Council of Peace evacuated L24-D shortly after the Bion Wars. Carbonium is currently an illicit element, and visitation to L24-D is restricted.

The **Coalition of Independent Planets (CIP)** is a union of allied planets that was formed in 2829, after the IP Wars. The Coalition spans eight galaxies and consists of 143 planets. It functions as a federal republic in which power is divided between a central governing authority and the individual planets. The federal government consists of three branches: executive, legislative, and judiciary. The judicial branch, known as the Council of Peace, is made up of 143 representatives -- one from each planet -- and resides on Terran.

The Coalition's primary responsibilities include issuing trade agreements between planets and galaxies, governing intergalactic communications, travel, and military services, and maintaining peace.

The **Council of Peace (COP)**, founded in 2832, is the judiciary branch, military defense force, and primary governing body of the Coalition of Independent Planets. The Council of Peace consists of 143 representatives, one from each Coalition planet.

The first mandate issued by the Council of Peace was the dismantlement of all bionic warriors, ending the brutally violent Bion Wars. Other mandates issued by the Council of Peace include reopening the Areal wormholes for travel into deep space, evacuating L24-D, and restricting travel to both Vestra and Fury.

The **Dead-On Missile (DOM)**, originally built as an air-to-surface missile (ASM) in 2478, was a Coalition favorite during the earlier half of the IP Wars. Although extremely powerful, the DOM only shoots straight ahead and is generally not used for moving targets. This missile is not guided -- but it is deadly.

If a pilot were to locate a DOM, it could be activated by pressing key number 4. Use a steady hand, take aim, and blast away.

The **Death Ankh** is a Sebekian artifact reputed to bring its possessor immortality. Originally passed down from Elder to Elder, the 12-inch platinum icon played a large role in conferring god-like status onto Sebekian High Priests. Now the Ankh is lost among the ruins, and thousands of believers make a pilgrimage to Sebek each year, hoping to find the renowned artifact.

"Will you see past darkness, live through death?" *The Book of Thoth II* 2:14:06

The **Dispersion Cannon 14 (DC14)** is the fourteenth iteration of the Dispersion Cannon, first designed by August Nislon during the IP Wars. Often compared to the ServoKinetic Laser and the Rapid-Fire Laser 20, the DC14 is a first-class antimatter laser. Designed to fire spray patterns only, the DC14 is not recommended for long-distance targets.

If a Coalition pilot were to locate a DC14, it could be activated by pressing key number 2.

The **F<sup>3</sup> (FFF)** is the most deadly triple-stage, fission-fusion-fission, Smart Bomb to date. Invented by Felix Wannamaker III, the **F<sup>3</sup>** puts the BFM to shame. The FFF is unique in that its detonator issues an ionic antimatter that causes the automatic restoration of Coalition shields. The FFF is highly valuable and extremely rare. Coalition ships are only able to carry one FFF at a time. During wartime, Coalition pilots reserved the lucky number 7 as the key to activate this supremely powerful bomb.

**Fury** is a quarantined planet at the border of Coalition territories. Ironically known as "the laughing planet," Fury's atmosphere prohibits surface living of any kind. Although many sightings of activity on Fury's surface have been interpreted as volcanic activity, as reflections of the sun's rays from misguided spaceships, or as various meteorological phenomena, some sightings remain unexplained by investigators.

Fury is the thirteenth planet in the first galaxy.



The **Grim Reaper** was the first fighting ship invented by Bion warriors. Designed for speed, precision, and durability, and distinguished by its ability to think, the Grim Reaper was an awe-inspiring craft. No other fighting ship has ever had as much success in strategic warfare.

When the Council of Peace (COP) ordered the dismantlement of all Bions in 2832, several members of the COP did not want to include the Grim Reaper as part of the dismantlement. The Reaper was considered too fine an example of bionic ingenuity. These COP members were overruled, however. Today, aside from a few privately owned ships held by collectors, the Grim Reaper exists as a museum artifact that can only be seen on Terran.

The **IP Wars**, 2482 - 2829, were a series of interplanetary conflicts fought among 13 galaxies. The Bions, a warrior class Terran developed for military use, proved invincible during these conflicts and helped Terran and its allies win the wars. The Coalition of Independent Planets was founded in 2829, after the conclusion of the IP Wars.

The Coalition spans eight galaxies and consists of 143 planets.

**Jump Zone** is a term used in describing emergency interplanetary travel. During the IP Wars, Jump Zones enabled fighter pilots to travel to their next mission immediately, whether on the same planet or on another planet. Jump Zones proved particularly useful on planets lacking wormholes. How Jump Zones function remains classified information, and Jumps are only available to Coalition members during times of extreme need.

**L24-D** contains the only repository of carbonium in charted space. During the IP Wars, the Bions mined the ore, using it as the principal component of their fusion missile, the Bion Fury Missile (BFM). After the Bion Wars, the Council of Peace ordered the evacuation of L24-D. The planet is now uninhabited and visitation is restricted.

L24-D is the seventh planet in the fifth galaxy.

The **Mitotic Kroy Ship** was originally designed on New Kroy by Sergeant Eric Washole during the Bion Wars. Like the BY2 Ship, the Mitotic Kroy Ship is grown from polyKroy. polyKroy's unique molecular structure enables the Mitotic Kroy Ship to divide evenly into two when fired upon, and regrow as two individual ships, thus posing a double threat.

For further reading, see Amy Danan Crow-Evans', "Uniting the Ship: A New Role in Mitosis," *Organic Synthetics*, Volume 32, June 2832.

**New Kroy**, also known as the City Planet, has a highly unusual surface composition. Land masses in the shape of buildings grow from polyKroy, an organic synthetic that exists just below the planet's crust. polyKroy is a transparent synthetic that grows quickly into any form and is nearly indestructible.

New Kroy enjoys a comfortable economy because of its vast polyKroy mines. polyKroy is used to build the BY2 Ship, the Mitotic Kroy Ship, and many off-planet housing structures and utilities, including radar dishes and telecomps.

New Kroy is the eighth planet in the eighth galaxy.

The **Pandanian Hover Craft**, an especially lightweight airplane, is used primarily on Sebek. Originally designed as a private plane, the Pandanian Hover Craft is especially suitable for landing on sandy terrain.

**Phosphorous (P)** is a nonmetallic element discovered in 1674 by Hennig Brand. It is extremely poisonous, and in solid form appears as a yellow to white, waxy substance. Because phosphorous ignites spontaneously when exposed to air, it is stored underwater. The major source of phosphorous is the mineral apatite, found in phosphate rocks. The principal use of phosphorous is in compounds in fertilizers, detergents, insecticides, soft drinks, toxic nerve gasses, pharmaceuticals, and dentifrices. Phosphorous compounds are essential in the diet. Phosphorous is a component of Adenosine Triphosphate (ATP), a fundamental energy source in living and bionic things, and of calcium phosphate, the principal material in bones and teeth.

Tiamat's oceans contain the last repositories of attainable phosphorous.



**polyKroy** is an organic synthetic found beneath New Kroy's crust. It is transparent, grows instantaneously into any shape, and is nearly indestructible.

polyKroy's unique molecular structure allows for even division and instantaneous regrowth. As a result, polyKroy is used as a building component for the BY2 Ship, the Mitotic Kroy Ship, and numerous off-planet buildings, radar dishes, and telecomps.

The **Rapid-Fire Laser 20 (RFL20)** is the twentieth iteration of the most powerful direct-fire laser used by the Coalition. Designed by Felix Wannamaker III as a forward-firing laser, the RFL20 is excellent for attacking moving targets. And like other lasers, the RFL20 regenerates its own ammunition.

During wartime, Coalition pilots always reserved key number 3 for the RFL20, as this laser was considered the 'lucky laser.'

The **Scarab Fighter** was first built in the late 25th century and epitomizes the height of Sebekian ship design. The Scarab Fighter is colored in Sebek's royal colors, blue and gold, and was originally used to protect caravans transporting precious alloys and gems.

For further reading on Scarab Fighters, please refer to Jo Marco Thoth's autobiographical work, *Flying the Sapphire and Gold: Aboard the Scarab Fighter* (Sebek: IP Press, 2622).

**Sebek** is known for its adherence to ancient Egyptian texts found on Terran before the IP Wars, and for its ruling class, the Elders, who model themselves after Egyptian gods. Specific rituals practiced on Sebek date back as far as 40,000 years.

Central to Sebekian belief is the annual search for the Death Ankh, a 12-inch platinum icon that is supposed to grant its possessor immortality. It is now lost among the ruins, yet each year, thousands of believers make a pilgrimage to Sebek, hoping to find the ankh. Originally passed down from Elder to Elder, the Death Ankh played a large role in conferring godlike status onto Sebekian High Priests.

Sebek is the third planet in the third galaxy.

**Sebekian Sail Ships** are noted for their extreme weight (nearly 20 tons) and primitive design. In early Sebekian history, an Elder always accompanied a Sebekian Sail Ship. The belief was that without an Elder aboard, the Sail Ship could not stay aloft. Today, Sebekian Sail Ships commonly accompany all river barges and are the primary communications link between Sebekian air and ground forces.

The **ServoKinetic Laser (SKL)** is a heat-generated, forward-firing laser. Self-replenishing and inexpensive to run, the SKL earned the nickname 'the Serv' during the latter half of the IP Wars. Designed by Sergeant Lee Washole during the IP Wars, the motto for the Serv is "can't work it too hard."

During the IP Wars, Coalition pilots always reserved key number 1 for the SKL. The SKL is traditionally a fighter pilot's first choice in ammunition.

**Sheol**, also known as red sheol, contains a peculiar molecular structure that destabilizes remarkably as it decays. The isomorphic decay of this mineral attracts wormholes -- shortcuts through space and time. Sheol can also be stockpiled and used as an attractor for wormholes ranging anywhere in size from 0.5 to 2 billion light years long. Sheol is unique to Ares, giving the planet its distinct red color. Its unusual characteristics make Ares the gateway to deep space.

**Terran** is the seat of the Council of Peace, the judicial branch of the Coalition of Independent Planets. Noted for its temperate weather, unrivaled system of government, and beautiful surroundings, Terran is considered the Coalition's utopian planet. However, Terran's history has been anything but idyllic. Ravaged first by the IP Wars and then by the Bion Wars, Terran's peace has been hard-earned.

Terran is the third planet in the fifth galaxy.

For further reading, please see Alexandra Heather Cote-Knopf's treatise, "Dystopia No More: An Analysis of Terran's Democracy," *Political Seizures*, No. 9, Spring 2832.



**Tiamat** is one of the few known water planets. Unique to Tiamat's oceans are large repositories of attainable phosphorous, a fundamental energy source in all living and bionic things. Tiamat is the sixth planet in the fourth galaxy.

The **Tiger Fighter** was designed by Felix Wannamaker III during the Bion Wars. Although inherently unstable in design, Tiger Fighters are extremely agile. They rely on computer-aided fly-by-wire control to maintain flight stability, and mark the continued improvement of low-flying strike aircraft, air-to-air combat, and close support of ground forces.

**Turbo Thrust** contains an additive that, when mixed in small proportions with fuels, modifies their properties and makes their use more effective -- indeed, 2080% more effective. This amazing advent in transportology could make wormholes unnecessary for intergalactic travel. Still undergoing CIP and military testing, Turbo Thrust is not yet available on the common market.

**Unibots** were formerly a subdivision of the Bion Walkers, the standard Bion ground-attack force. During the IP Wars, the Bion ground force destroyed nearly one-fifth of the anti-Coalition population. In combat, Unibots were noted for their extreme agility and high speeds. Production of Bion Unibots was halted in 2832 following the Coalition of Independent Planets' joint decision with the Council of Peace.

**Vestra** is an artificially constructed planet, originally built as a penal colony for bionic insurgents. Designed by Felix Wannamaker III, Vestra is the only planet to mimic the properties of an asteroid. Wannamaker used the asteroid design to inhibit the possibility of Bion escape. He named the planet 'Vestra' as a variation on 'Vesta' -- the brightest asteroid in charted space.

Vestra is the fourth planet in the second galaxy.

For further reading, please see Edward Robert Epps' *Asteroid Design* (Terran: IP Press, 2829).

The **Viper (VIP)** is long-range guided missile directed by an inertial navigation system. It uses an infrared guidance system that homes in on heat sources, such as engines, and is sensitive enough to detect heat caused by friction. The VIP infrared detector, designed by Leon Mussel IV, locks onto the heat emitted from the target, so that, after launching, it requires no guidance by an operator. Thus, the VIP is often referred to as a "fire-and-forget" missile.

If a pilot should locate a very important VIP, it could be activated by pressing key number 5.

## The Discovery

**Wormholes** were first discovered by Feynman Tipler Benford-Hawke in the late 20th Century. While analyzing dark matter -- massive compact anomalous halo objects -- Benford-Hawke discovered the existence of gravitationally negative anomalous compact halo objects (GNACHOs) (Landis, p. 2). These objects are now also known as negative mass, or "white holes," since their behavior and structure seem opposite to that of black holes. Benford-Hawke detected their existence by the bending of light due to gravity -- an effect now known as the "gravitational lens" (Landis, p. 1). Unfortunately, samples of negative mass are very short-lived and "pinch" off so quickly that they could not be examined for decades -- but their potential use to connect two distant regions of space could not be ignored.

In 2032, Kit Horne and his graduate students at Taltech turned the problem of pinch-off around. They wanted to know what form of matter is required to hold a wormhole open, so no pinch-off occurs. They discovered "exotic matter" -- highly stressed matter, consisting of enormous tensile strengths. The tension or pressure of exotic matter exceeds its energy density (Price, p. 4). At the time, Ares red sheol's molecular structure and isomorphous decay had not been thoroughly analyzed. It was believed that exotic matter existed only under conditions of extraordinary pressure in the early universe -- stabilized by what is now known as loops of negative-mass cosmic string (Landis, p. 2). The discovery of red sheol as a highly stressed matter proved Thorne right; sheol stabilizes a wormhole's mouth.

A traversable wormhole is known as the negative counterpart to a black hole, thus the designation "white" hole (Price, p. 5). (According to astrophysics, negative pressure fields drove the expansion of the universe during its inflationary phase. The mass of negative energy the wormhole needs is exactly the amount that would be needed to form a black hole if it were normal, positive energy.) The amount of negative energy required for a traversable wormhole increases and decreases with the linear dimension of the wormhole mouth. One meter cube entrance requires a negative mass of approximately  $10^{27}$ kg (Price, p. 5).

Ares, known as the gateway to deep space, retains the most reliable wormhole transport system because of its unique topsoil, sheol, which is one of the few exotic matters known today.

## Traversable wormholes

The first probe to traverse a wormhole occurred in December 2380, traveling from Ares, in the fifth galaxy, to Tiamat, in the fourth galaxy. After waiting 17 years and sending more than 20 probes through different wormholes, scientists on Ares finally received the historic reply from Tiamat on April 23, 2473. The message: "Greetings." Contact with life from another galaxy had finally been made.

Emile Randel was the first life form to traverse a wormhole. He departed Ares on April 23, 2569, and arrived at Tiamat on June 26, 2569. Travel that would formerly have taken eons was accomplished in months.

## Time travel and wormholes

Although much research is still being done as to whether wormholes can enable time travel, the accepted conjecture is that they cannot -- primarily because of the physical mechanisms that enforce Chronological Protection Conjecture (CPC) (Price, p. 6). The mouths of a wormhole, with a forced clock difference, cannot be brought near enough together to allow a traveler to attempt a violation of causality. Gravitational and quantum field effects increase as the two ends of a wormhole approach the critical point, and either induce mutual repulsion or collapse the wormhole (Price, p. 6).

## References:

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## See Also:

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The **X2 Crane**, c. 2670, is a form of the early tower or cantilever crane. Working at speeds previously deemed impossible, the X2 Crane can build an atmoscraper in less than a day.

The X2 Crane is distinguished by its ability to think as well as build, and was the first bionic crane invented.

For further reading, please see Mark Brett Gupta's essay, "Intelligent Reality," *Interview*, Issue 2092, February 2670.

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