# Black Sun Tactical Operations

# Delta V User Manual

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Bethesda Softworks is always ready to try and help you with your software difficulties. Technical support is available at (301) 963-2002, Monday thru Friday, between 11:00 a.m. and 5:00 p.m. Eastern Time. Please be near your computer and have pencil and paper handy when calling. Customer Service is available at (301) 926-8300, Monday thru Friday, between 9:00 a.m. and 5:00 p.m. Eastern Time.

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# Designer's Notes

First, we want to thank you for purchasing Delta-V. It is our sincere wish that it brings you hours of enjoyment in the strange and wonderful world of cyber-space.

Producing a flight adventure such as Delta-V gave rise to its own set of unique challenges. Unlike the current genre of flight simulators that attempt to give accurate representations of space or terrestrial environments, we needed to meld a whole new concept around the fast and furious world of Netjackers operating within the undefined limits of virtual networks and proactive ICE. Not an easy task when you consider that to keep the action high we had to maintain both the quality of close-in, visual representations along with the speed of game play.

The final product borrows from the best of the 3D 'feel' of flight sims coupled with the kind of nonstop action found in the arcades. The result - a lightning ride down the cyberspace data matrix using the latest in quantum flight dynamics merged with the ultimate in hi-tech weaponry. Where objectives are straightforward, but flatlining waits around every treacherous curve and slipstream of the Global Sense-Net

You don't need a 300 page manual and a certificate from the U.S. Air Force Academy to strap into Delta-V, just quick reflexes and the guts to take this baby for a little ride...

Good luck, Netrunner, The Delta-V Team

## Introduction

The dark oppressiveness of the construct surrounded his mind, holding in check his efforts to free himself and return to the wide-open freedom of the Net. His consciousness strained to break through the walls that appeared solid, but that he knew were actually insubstantial — the virtual representations of the neuralelectric signal inhibitors preventing his brain from communicating with his deck. In spite of the courage he considered his greatest attribute, he started to feel trapped, beginning to feel the fuzzy edges of panic trying to overflow the high ground of rational thought.

"Why don't you just do it," the young man's thoughts roared into the opaqueness. "Kill me and be done with it."

"Is that what you really want, boy?"

The response, which seemed to emanate from all sides, surprised him. He had intended his challenge more as a way to soothe his rattled nerves, not as a specific request of anyone.

"Yeah. That's what I really want," the young man's voice resonated with sarcasm. "Look, I ain't got the time for this. If you're gonna do it, then do it. Otherwise let me out of here, 'cause I'm a busy man. Just don't try playin' no games with me, 'cause I ain't in the mood."

"Games," the disembodied voice replied in deep tones that revealed its masculine origin, "now that is an interesting idea. I think you are the one who is playing games. Unfortunately for you, I am an opponent whose abilities you could not possibly have fathomed."

Silence punctuated the statement. In spite of the apparent hopelessness of his predicament, the young man maintained his composure. Losing control meant losing class, and class meant everything to him. If you didn't have class, then you were a nobody, and he'd worked too hard to be somebody. Only one thing torqued him though: dying would mean he had lost, and losing was something he had never done well.

He would fight for his life: a noble undertaking he knew, when his consciousness was imprisoned by a V Empath field. Even though his body remained safe in a subterranean room beneath the Spaten Chemical Works, the fabric of his mind was trapped in the matrix circuits of the Black Sun Corporation. The ICE he had been trying to slip had done him one better, overcoming his deck defenses and capturing his mind. One simple burst of high amperage

current down the Net conduit paths that led to his deck and to the neural jack in his head would burn his mind, killing him instantly. Flatlining held no interest for him whatsoever.

Suddenly, he felt the pressure on his consciousness change. His virtual vision began to narrow, causing him to become disoriented. Signal impulses to the auditory sections of his brain began to fade, leaving him with only the slight ringing of silence. He was sliding into unconsciousness, and some part of him recognized this as odd. A part of his mind acknowledged that he was dying, while another consoled that at least it was happening without pain. Just before he lost all awareness he heard a voice intoning, "Encephalic narcosis complete." What an absurd thing for angels to say to a dying man....

Consciousness returned with a rush like a blast of arctic wind howling around him. Before his mind's eye swirled a charcoal blackness filled with specks of color, the aftereffects of a flash of light in the eyes of a man accustomed to living in the dark. Instantly, he realized that an awareness of his body had been returned to him, and he knew he needed only to raise his eyelids for light to break the darkness and show him the familiar confines of his room beneath the Chem Plant.

As he opened his eyes, his mind started assimilating the sights and sounds of his environment. Immediately, he knew he was racked. He sat in a high-backed chair, smooth leather tangible on the armrests under his hands. In front of him spread a curved desk, its base formed from what looked like one half of a tree split along its diameter. On top of the enormous piece of wood rested a similarly curved slab of black marble that served as the desktop. Behind the desk stood several windows that mirrored the curve of the desk. Beyond those windows stretched a vista of a city he recognized, but had seen only from the darkened alleys and SimStim cantinas. From this height, he could see spires and towers, each one obscuring its own piece of the horizon. Eerily silent, the office was devoid of human or city noises; there was not even the hum of lights or a deck 2-D display to fill the emptiness.

Between desk and windows was a high-backed chair much like his own. Enfolded in the chair's coriaceous embrace sat a man watching him impassively. The man was dressed in a black uniform short-jacket with a short collar, trim, tapered pants, and black boots. A black, blue and orange pin, obviously an emblem, was pinned on the right side of the jacket. On the left side, exactly level with the emblem was another pin with the man's name: Bosco Tasman.

"Cazimar Connery Enuvian, aka Caz, aka CazCade Failure, aka CazPer the Ghost," Tasman read from an electronic file showing on the display imbedded in the ebony marbled desktop. His deep voice resonated authority. "Personal Identification Code, number five-oh-one-oh-three-three-seven-two-nine. Born August Twenty-Seventh, Twenty-Two Eighty-Six, at Gibson Memorial Hospital, Sterling County, 2nd District, in the Rocky Mountain Urban Area at six nineteen pm. No current record of location after Twenty-Two Ninety-Eight —"

"Am I supposed to be impressed or scared," Caz interrupted harshly, hoping that indignation would disguise his shock at finding his consciousness reunited with his body, in an office many kilometers from the Chem Plant where both had last been together.

"— InterPol records show two arrests for drug trafficking, one for B&E, and one for attempting to bribe a federal marshall," the voice continued its recitation, ignoring the young man's outburst. "What did you traffic in, Mr. Enuvian?"

"It's Caz. I gave up that other name a long time ago," Caz retorted, spite tingeing his voice.

The man behind the desk flashed an icy glare at Caz, his eyes narrowing to thin slits. Tasman's piercing gaze held a threat that need not be verbalized.

"Uh, the usual. You know, Cephilene Blue, Moon raisins, Sunnies, Copperheads, whatever," Caz finally answered, nervousness now creeping past his outward facade of calm.

"Do you use?"

"Yeah, sometimes .... What of it?"

"Reasons, Mr. Enuvian. Are you hooked or are you dry?"

"Go 'line yourself! I don't have to answer to you," Caz shot back, irritated that this man thought he had such power over him.

"Interesting," Tasman responded, pursing his lips. "I'll take that as 'hooked.' Of course you understand Mr. Enuvian that we can't make good use of junkies. And since we can't let you go,...well, I hope you enjoyed your life. Good day, Mr. Enuvian."

As he stood up out of his chair, Tasman pressed a body-heat sensitive panel on the desk display, closing the electronic file. He walked around the desk and toward the door in the back of the room.

"No," Caz said in a strong, clear voice. He knew the man was trying to pressure him, to break him. Unfortunately, it was working. Caz knew he had to play for time until he could figure a way out of this.

Tasman stopped, his hand on the opener plate set into the wall. Slowly, he turned back to face into the room. Unphased, he walked back to his chair behind the desk and sat down. Before turning his attention back to the young man in the chair, he glanced down at the display panel on the desk. The information he saw almost made him smile. Scrolling down the panel were statistics on his subject's brain wave patterns, voice stress level, heart rate, blood pressure,

respiration rate, pupilary dilation, and scores of other physiological functions.

"At least you are not lying," Bosco said in a cold, unemotional tone.

Having played this game for over fifteen years, Bosco Tasman knew the young man would give him an answer. They always did once they realized the futility of their situation.

"Mr. Enuvian, though I am a patient man, please do not try that patience, else things might turn out for the worst."

Tasman leaned forward in his chair and touched the key that would bring his subject's file back onto the display.

"Never convicted, never served time. Hmm...." the voice hesitated, "we'll have to see about deleting any fingerprint, DNA, or brain scan files. We don't like records on subjects we capture.

"Mr. Enuvian, as you can tell, we have ended your attempt to break into the accounting grid of our Corporate matrix. In addition, we captured your mind in a neural stasis construct long enough for our people to retrieve your body from the Spaten Chemical Works. The two were reunited approximately twenty-two minutes ago after three hours of separation."

"Why," Caz demanded, angry at a situation he did not understand and the embarrassment of having been caught and forced into such humiliating circumstances. He did not like losing control, and right now he was in a flat spin with little chance of recovery.

"If you're good, we might get to that...." Bosco responded, his slate grey eyes narrowing as he studied his subject, predator to prey.

Caz shuddered inwardly at the implications of that statement. He would have to play this exactly right. He didn't even want to consider the consequences of failure.

"Who do you work for, Mr. Enuvian?"

"What do you mean," Caz blurted, the question catching him by surprise. They must know I'm an independent, he thought to himself. "No one owns me."

For the first time, Bosco Tasman smiled. "Until now .... "

Tasman waited a moment to let the implication sink in. "Mr. Enuvian, do not err in overestimating your importance. Your continued existence is entirely dependent on my patience, which is rapidly wearing thin. Now,...why don't I believe that a hyped-up speed baller like you runs solo?

"I don't know, Mr. Tasman," Caz sneered, tiring of the man's condescension and mockery. "Why don't you just check your little screen there and tell me if I'm lying?"

Behind his desk, Bosco Tasman inwardly smiled. The kid was cocky, and that would make this morning very interesting indeed.

To Caz, the gleam in Tasman's eyes meant trouble. It was the look of a cat playing with its dinner. The man was toying with him, and there was nothing he could do about it. Somehow, he had to regain control of this situation, or his life would be forfeit. Of that he was sure. First, he must figure out what this man wanted. Once he accomplished that, he would have control and could manipulate things to his advantage.

"Look," Caz said in mock resignation, "I work for myself, I always have. I'm low-life, see. I live in the Hole, and there ain't no Corporations there, ain't no executives there, hell, there ain't anything there. You do what you can to survive. So me, I run, and I run independent, and I'm damn good at it."

"Good?!" Tasman growled, leaning forward in his chair and stabbing a finger at Caz. "Enuvian, you couldn't run your way into the circuits of a household appliance. I've seen flatliners drive a deck better. Hell boy, you couldn't even get past our outer layers of ICE — even automated probes can do that. Your reconnaissance flybys were purely amateur. We recorded every pass you ever made to scope our matrix. Every single time, we scanned your signal, knew where you were operating from, and with what kind of equipment. We ignored you, because we knew that with an ancient InCyberCom deck and a piss-poor Yatsushita jack you'd never get anywhere."

Abruptly, Tasman stood up from his chair. Putting both hands on the desktop, Tasman leaned over the desk, bringing his face within a half a meter of his subject's.

"And what kind of idiot tries to run a Corporate matrix without an ICE-breaker? Are you stupid Enuvian, or just retarded?"

Caz stared wide-eyed at the man inches away from him. Things were going wrong, all wrong. He was losing any chance at an edge. I've got to do something, Caz thought. But before he could open his mouth to speak, the man behind the desk robbed him of the initiative.

Tasman straightened himself, an impassive mask sliding back over his face. Slowly he sat back down in his chair, smoothing the fabric of his jacket as he leaned back into the rich leather upholstery. He spoke again, this time in a controlled, quiet voice.

"Mr. Enuvian, you are a waste of my time. Its obvious that you are an independent because no one of any intelligence would hire you."

Tasman touched several keys on the deck console. Immediately, the door at the rear of the room hissed open and two men entered, each clad in black plasmer armor suits.

"Gentlemen, please escort Mr. Enuvian to the Sixty-Sixth floor," Tasman commanded.

"No!" Caz jumped up out of his chair, rage burning from his eyes. "You don't know nothin' about me. You say I'm no good, but I got a rep that says otherwise. I'm one of the best in the Hole, and if you got assets there you'll know it."

Caz was shaking with desperate anger now, sweat dotting his brow. The man at whom he was yelling however, sat perfectly motionless, a dispassionate look on his visage as if he was bored by the whole event. Noticing that the security personnel had halted at his outburst, Caz continued, trying to buy any time he could.

"Yeah, I ran your matrix with no breaker. But it wasn't 'cause I'm stupid. I use my talent, 'cause down in the Hole there ain't no breakers unless you got cash and lots of it. I don't have no office like yours, with tech all over the place like its something given out for free. I use whatever junk I can steal or build, and yeah, its trash. I ain't got a construct to crash a grid, and I ain't got a lot of things to give me an edge. But I've got talent. I know the backdoors and shortcuts of the Net like nobody else. I've seen stuff your high-powered jocks ain't never seen cause I'm right down in the cybermuck. I gotta do everything the hard way, and I still get in places I ain't supposed to be. You show me somebody else that could do the things I've done with the lo-tech garbage I use and you can kill me right here on the spot. If doin' what I do as good as I do it is stupid, then I'll be an idiot any day."

Breathing hard now, Caz paused his tirade, letting his challenge hang in the air between him and Tasman. His throat was raw from all the yelling, and he could feel adrenaline pumping into his body giving him a rush that he had only felt when Netrunning. Finally, seeing that Tasman intended no response, Caz spoke again in a somewhat calmer voice.

"Two months ago I melted a U-Nex R&D grid. Last week I punked a Polity Intelligence sub-matrix. I did both of those with no breaker, just skill. I'd like to see you do any better. You give me a good deck and access to breakers, I could flash any matrix in the Net."

"Are you asking for a job, Mr. Enuvian," Tasman asked, finally breaking his silence.

"Yeah," Caz dared. "Why not? If I don't cut it, you can always frag me. But I ain't worried, 'cause I know I'll be the best runner you've ever had. Besides, what have I got to lose?"

"Intriguing," Tasman said blandly. Silence followed his response, spilling into the room as each second passed.

The quietness stretched for minutes. Caz could feel his heart pounding, knowing that this man's next words would determine his fate. A bead of cold sweat slid down his back, and he shuddered. The wait became interminable, and Caz wanted to yell at the man to give him an answer.

"I accept your offer of service," Tasman finally said. He heard his subject exhale loudly, and read the relief that glowed on his face. Gotcha, Tasman thought, a smile threatening to reveal itself. Carefully, he held it in check, displacing it with a scowl. "But if you so much as blink wrong, I will personally spike you." "Fine," Caz responded, not bothering with any expression of thanks. "When do I go?"

"Tomorrow morning," Tasman answered, "Oh-seven-thirty. Report to a runner called Daenar Quade. He'll set you up."

Bosco Tasman looked away from his subject to the two security personnel who stood just inside the door.

"Take him to Zufa on Floor Thirteen....Mr. Enuvian, you are dismissed."

Alone in his office, Bosco Tasman finally had the opportunity to smile and reflect on the proceedings of the past hour. It had gone well, and he was pleased with the results. Only rarely did a subject fail to comply, and that, Tasman told himself, always reflects poorly on my skills. It almost always goes according to plan, Tasman thought. These egotistical young men were so easy to manipulate — just wreck their ego, then back them into a corner. The response was always the same: 'Just give me a chance and I'll show you.' Once you had them desperate, then you could bring them in on your own terms, and they would remain loyal to you, grateful that you didn't exterminate them like so much vermin.

"Computer,... Voice recognition, Tasman, Bosco. Corporate ID Tango Zulu 117." The command was spoken as Tasman lit up a cigar — a little celebratory habit he had acquired back in the days when he cowboyed the Net.

"Voice print analysis positive. You have access, sir."

"Subject: Casimar Connery Enuvian. File Number M1065. Interrogation successful, no known contact with any hostile Corporation or entity. No previous employment. No known chemical dependencies. Subject is verified acceptable. Subject has decided to cooperate with Black Sun on a trial basis. Pending successful demonstration of talent, the subject will be held at the Corporate Matrix facility. Failure of the test will require the subject's expedient demise. Authorization for any necessary action is approved on my command code."

"Information Updated. XPD authorization verified and logged."

Bosco Tasman smiled and inhaled deeply from his cigar.

"Next subject .... "

# Installing the Game

1. Make a backup copy of your original disks and store them in a safe place.

2. Make sure that your computer meets the system requirements for this game. Delta-V requires the following:

Computer	IBM, or fully compatible,	
	80386 33 MHz—80486 66 MHz highly recommended	
/		
Mouse/Joystick	You must have a mouse or	
	joystick to play this game	
System Memory	2 MB EMS free	
	2.5 MB EMS free to run the game with digital audio	
Hard Drive	17 MB free disk space (If you do not have enough disk space we suggest you back up	
	your current files and delete those you do not need or will not actively use)	
Conventional		
Memory	614,400 bytes (600K) free	
Graphics	VGA graphics card and VGA monitor	

3. Insert Disk 1 into your computer's floppy drive (A: or B:) then type the letter corresponding to the appropriate drive. Once the onscreen prompt shows that you are logged onto the appropriate drive, type INSTALL. Press the ENTER key on your keyboard. Follow the onscreen prompts to install the game.

### **Example:**

If you have a 3.5" floppy drive called the B: drive, do the following (keyboard commands will be in bold typeface):

- 1. Insert Delta-V disk #1 into the B: drive.
- 2. Type B: [ENTER]

### 3. Type INSTALL [ENTER]

4. Follow the onscreen prompts to install Delta-V onto your hard disk.

We highly recommend that you use SMARTDRIVE and Norton SPEED DISK to speed up disk access during game play. For more information consult your DOS manual or look at the General Tips section at the back of this manual.

Delta-V will not run off of floppy disks and is meant to run on IBM or 100% compatible machines with DOS version 5.0 or greater. We have also found that Disk Doubler or other disk compression routines for hard disks may have adverse effects on running Delta-V. If you have any questions consult your DOS manual or contact our customer support service at (301) 963-2002, Monday through Friday, 11 am to 5 pm Eastern Standard Time.

### Configuring Delta-V to your system

If you have a sound card and want to play the game with sound and/or music, you will need to configure the Sound FX and Music drivers once Delta-V has successfully installed. To do so, you must choose the 'Configure Game' option. Once done, you will see the following choices:

Select Sound Card Select Music Card Change Sound Default Change Music Default Done

You can select your sound and music card using the first two options. Consult your sound card manual for precise instructions on type and settings for your particular card. Not using the correct setting may cause problems with your system. For your information, Delta-V is shipped with the following default settings:

Sound/Music card selected:	No Sound
Base I/O address:	220 Hex
Base IRQ setting:	7
Base DMA setting:	1

# Playing Delta V

From the \DELTAV directory created during the installation, you must type DELTAV to play the game.

### Main Menu

### New Game:

Select to begin a new Netrunning career. You will want to select this option the first time you jack into the GlobalNet.

### Load Game:

Select to load a Netrunning career you have saved. This will bring up a menu of saved careers from which you can pick one.

### **Reputations:**

This screen displays the current rankings of all Netrunners who have run for Black Sun Corporation. Your rank is determined by the amount of credits you have earned.

### Setup:

Select to change the Net interface settings (see page 14).

### Quit:

Select to terminate your connection to the GlobalNet and return to the real world of DOS.

### Setup Menu

This screen will enable you to toggle 'on' or 'off' certain game settings so that you may customize your playing environment. In addition, you may also fine tune several settings from this menu. The following settings may be changed:

<b>Configure Graphics:</b>	Opens the Configure Graphics menu.
Music ON/OFF:	Turns game music on or off.
Music Volume:	Increases or decreases the volume of the music.
Sounds ON/OFF:	Turns game sounds and voices on or off.
Sound Volume:	Increases or decreases the volume of the sounds and voices.

Calibrate Joystick:

Exit:

If "Joystick" is selected, use this function to set the movement ranges for the joystick. Return to the Main Menu

Graphics Detail Menu

This screen will enable you to fine tune additional settings of the Net environment. **Sounds and Controller:** Return to the Setup Menu View Depth L/M/H: Lengthens or shortens the distance that a runner can see down a lattice trench Lattice Detail L/M/H: Sets the amount of detail visible on the bottom and walls of the lattice trench Sky ON/OFF: Toggles plasma sky on or off **Cockpit ON/OFF:** Turns the cockpit graphic on or off **Poly Shade:** Increases or decreases the amount of shading detail on the polygons in the lattice trench Enemy Detail L/M/H: Sets the amount of detail of the enemies Exit: Return to the Main Menu

Note: On slower machines, the speed of the game can be improved by setting Poly Shade to Low and turning the sky OFF. These options, in addition to View Depth, will show the best improvement.

### **Briefing Room**

Man Behind Desk:	Click Daenar Quade for general mission briefing.	
Left Monitor:	Click this monitor to log in or to continue a previously saved career	
<b>Right Monitor:</b>	Click this monitor for flight practice.	
Desk Console:	Click console to terminate Game and return to the Main Menu	
<b>Overhead Console:</b>	Click console to save Game	

### **Trace Configuration**

Displays the weapon, armor, and propulsion augmentation systems that Black Sun Corp has available for authorized Netrunners to add to their Trace. The Trace Augmentation Systems department constantly updates the selection based on new technology and the Netrunners' individual needs, merit, and performance.

Click on the arrows at the top and bottom of the window to scroll the icons up or down.

To obtain a description of an item, position the cursor on the icon and press the left mouse button or joystick button 1.

To equip an item, position the cursor on the icon, press and hold the right mouse button or joystick button 2 and then drag the item to the spinning Trace in the upper left hand corner of the screen.

*Note:* To place a weapon augment in the 'Cannon A' slot, drag the icon to the left side of the Trace. To place the augment in the 'Cannon B' slot, drag the icon to the right side of the Trace.

Cannon A:	Primary weapon bay, fired by joystick trigger or mouse button 1	
Cannon B:	Secondary weapon bay, fired by joystick or mouse button 2	
Hull:	Current armor type protecting the Trace	
Engine:	Current propulsion system type to power the Trace	
Armor:	Number of Armor Units remaining	
Energon:	Number of Energon Units remaining in the fusion core	
Other:	Indicates additional augmentation systems added	
Office:	Return to the Briefing Room	
Confirm:	Select to jack into the GlobalNet and run your mission	

### **Operations Room**

Once a mission is finished, the Netrunner is debriefed in the Operations Room. The screen at the center of the room provides the following information:

Mission Status:	Indicates whether the mission was a success or failure	
Success:	Mission completed with all objectives destroyed or captured	
Abort:	Netrunner voluntarily jacks himself out of the Net before the mission is completed	
	Netrunner will be docked 10,000 credits for aborting the mission.	
SysCom Abort:	Netrunner is jacked out of the Net by Black Sun Systems Command for failing to capture	
	or destroy all objectives. Netrunner will be docked 10,000 credits for aborting the mission.	

Terminated: Netrunner dies while attempting to complete the mission.

**Mission Statistics:** Provides information about weapon system accuracy, including number of times a weapon is fired, the number of hits, and the percentage accuracy of each weapon.

Mission Summary: Provides information about credits earned as a result of the mission, including payment for successful completion of the mission, ERCC bonus, bonuses for killing additional enemies, etc. Also states your current credit balance.

**Continue:** Click this to continue to next screen or to move to the next mission.

## Objectives

The year is 2306, and in this world, data is money; and, as always, money is power. You are a Netrunner for Black Sun Corporation, one of the five largest Mega-Corporations in the world. In order for the Corporation to maintain its predominance, it requires vast amounts of data. What data Black Sun does not already have, it secretly steals from those who do.

The key to these covert actions are the Netrunners. These cybernetically enhanced individuals navigate cyberspace, penetrating Corporate data defense systems by using guile or force....

... Once inside the data grids of a Corporate matrix, a runner captures whatever data his employer deems significant, be it the Cyph-Lock codes to credit accounts, blueprints for new software, or the personal telephone logs of a Corporation's CEO.

In addition to initiating such raids, Black Sun is often the target of Netrunners working for hostile Corporations. Therefore, it is also the duty of a Black Sun Netrunner to protect the Corporation. Often your skills will be called upon to defend data by destroying invading runners.

Since you operate in both an offensive and defensive capacity, you require the means to attack and defend. Your weapon is the Trace, designation Delta-V. Essentially, the Trace is a weapons platform designed to meet the virtual requirements of cyberspace. It is a software construct that enables you to move rapidly through the Net, break ICE, and bring to bear on any target a full range of neural-electric destructive capability. Not only do you have the ability to defeat the circuit-based defenses of a Corporate matrix, but you also possess the capability of disrupting the neural pathways of a hostile Netrunner.

Running the GlobalNet will test the limits of your manual-neural coordination. As you speed through the Gai-Juko Sense-Net (or Mega-Corp Sense-Net as some call it), you will face opposition at every turn. Only your skill and your Trace can get you through alive. Black Sun will use your talents for a variety of missions, each one different from the next. Each mission objective is outlined in the mission briefing that precedes your launch. Missions can vary from destruction of another Corporation's assets to capturing vital data along the matrix.

It is important that you fully review the mission briefing before venturing into the Sense-Net.

### Compensation

For risking your mind and perhaps your life on the Net, Black Sun Corporation will issue payment based upon the difficulty of the mission and the amount of time it requires you to reach your objective(s). For each successful mission, an appropriate number of credits will be awarded to your account.

Additional credits may be earned for destroying another Corporation's property such as gun turrets, ICE, Cyph-Locks, or other iconic representations of property vital to a Corporation's well-being.

If a netrunner voluntarily jacks himself out of a Netrun (by using ESC), he will be docked 10,000 credits. This penalty is to cover the costs of matrix insertion, Corporate energon usage, and to serve as a disincentive to this course of action in the future.

Black Sun will also pay a special bonus to those Netrunners who demonstrate exceptional accuracy in destroying enemy targets. The flight recorder of the Trace will record the accuracy of the Netrunner's weapon fire. If after the first twenty-five shots the Netrunner maintains an accuracy percentage of ninety percent or greater, he will be awarded a special bonus if he survives the run.

Failure means only catatonia or death.

### The Net

The Net governs how fast a runner's Trace can move through cyberspace. The relationship between the Net and Trace speed is directly proportional to the distance between a Trace and the Netlattice. The closer the Trace is to the lattice, the more rapidly it will absorb energy from the conduit, which will allow an increase in forward velocity. Conversely, as the Trace moves higher away from the lattice, its energy intake will decrease and its speed will slow.

In addition, the farther the Trace moves horizontally from the lattice trench, the slower its velocity, and the greater the rate of heat accumulation. A Trace can survive outside the lattice trench, for approximately 10 seconds before heat buildup begins causing damage. After 10 seconds of contact the Trace sustains 1 point of damage to its armor for every second it is outside of the Netlattice. A heat level meter will display any heat buildup, as will the "Warning" or "Critical" indicators.

You are advised to stay in the 'Trench' to maximize velocity, minimize heat accumulation, and elude enemy AI targeting systems. Pushing hard against the bottom of the Trench increases speed at the risk of heat buildup to your Trace. Netrunning is the art of balancing heat and speed: knowing how far you can push the limits. Fly smart, Runner.

The GlobalNet is comprised of many millions of data conduits: runners call each one a Netlattice, or a lattice trench. These data conduits are the foundation on which data constructs are formed. When perceived from virtual altitude, the crisscrossing, intertangled lattices form a conduit web: to a runner, it looks like virtual 'ground.' Each section of the GlobalNet ground is sectioned into many Net Entities, that operate as data districts. This arrangement aids in the more efficient use of data. Mega-Corp matrices are located in one Entity — the Gai-Joku Sense-Net, while those of academic institutions occupy another, the matrices of national governments still another, and so on. However, the Gai-Joku Sense-Net is by far the largest and most significant.

The data constructs that are erected on the Net are dependent on the lattices, for each lattice provides the energy necessary for a construct to exist and for it to interact with other constructs in its matrix and throughout the Net. A construct can span one or many data conduits depending on its size and function.

Because every lattice is designed for two-way data movement, constructs are protected to ensure against unauthorized transfers of data from or to a construct. The Mega-Corporations employ Intrusion Countermeasures Electronics, or ICE. These systems use automated AI defense constructs (called Guardians), matrix defense drones, neural mines, obstacles, electro-synaptic gun turrets, and other impediments to prevent unauthorized access to a Corp matrix.

However, the lattices, in addition to providing a Corp with the basis for its defenses, also offer one crucial advantage to the Netrunner: the raw energy necessary to increase his velocity, hurling him along a Netlattice and deeper into the heart of a targeted Mega-Corp.

# Pilot Environment

### The Cockpit

- Energon Level: Indicates the amount of Energon remaining in the fusion core of the Trace.
- Armor Strength: Indicates the amount of Armor Units remaining on the Trace.
- Heat Indicator: Indicates the amount of heat accumulating on the Trace's armor. Outside the Trench, heat builds at 1 unit every 2 seconds. If the Trace builds up 5 units of heat, it will sustain a loss of 10 Armor Unit per second for every second that it remains outside the lattice trench. Moving back into the trench will reduce heat levels to below 5 units; however, cooling does not restore lost Armor Units.
- Radar:This electronic warning device gives a Netrunner a virtual representation of the Netlattice<br/>ahead and behind the Trace. The Trace appears as the blue dot and gray cross hairs at the<br/>center of the radar. Trace fire appears as yellow dots, turrets are green dots, ICE Drones are<br/>red dots, ICE Guardians are large red diamonds, and objectives are large yellow diamonds.
- Range-to-TargetShows the distance, in Alpha units, to the ob-Indicator:jective that is to be destroyed or captured. When the Trace is within 50 Alpha units of the<br/>objective the readout will change to yellow. When the Trace is within Alpha proximity of 25,<br/>the objective the readout will change to red.
- AutomatedRiding shotgun with every Netrunner is an AI-controlled voice warning system. NamedRanging &ARTEMIS, this system provides the Netrunner with information about the range to a tar-Targetingget, target acquisition, the structural integrity of the Trace construct, heat buildup, andElectronicsenemy proximity. It is both a threat receiver and a damage warning. ARTEMIS providesMultipleconstant status updates to the runner through his neurolink, and notifies him when hisInterfacesituation is critical, so that the runner can adjust flight parameters accordingly.Sensors

(ARTEMIS)

Estimated Run		
Completion	The ERCC indicates the time remaining	
Chronometer:	for the Netrunner to complete the mission.	
Alpha Indicator:	Shows the Trace's Alpha position.	
Objective Counter:	Indicates how many objectives have been captured or destroyed and how many still remain to be captured or destroyed.	
Weapons Indicator:	Shows the weapons active in Cannon ports A and B.	
Target Reticle:	Siting circle for the Trace's cannon systems; indicates the direction of cannon rounds fired.	
Proximity Warning:	The four quadrants of the target reticle located at the four cardinal compass points. Indicates which surface of the Trace is making contact with the Netlattice.	
Heat Indicator:	As the Trace builds heat, the two horizontal cross bars turn incrementally from green to red. As the red spreads from the ends of the bars toward the center (reticle) the more heat the Trace is accumulating.	
Energon Level:	Shows the amount of Energon Units remaining in the Trace fusion core.	
Armor Strength:	Shows the amount of Armor Units remaining on the Trace hull.	
Target Designator:	Independently targetable seeking reticle for the Trace's torpedoes. The designator will lock onto targets that come into the search cone of the torpedoes, and will stay locked onto that target until it is destroyed or until it moves out of range.	
Collision Indicator:	The cockpit screen will flash blue whenever the Trace collides with an obstacle in the lattice trench.	
Damage Indicator:	The cockpit screen will flash red when the Trace sustains a hit from enemy fire.	
Capture Indicator:	The cockpit screen will flash yellow when the Trace captures an object.	
Warning Indicator:	This indicator flashes "Warning" at the top of the screen in red when the Heat Indicator reaches the half-way point.	
Critical Indicator:	This indicator flashes "Critical" at the top of the screen in red when the Heat Indicator is filled orange. At this point the Trace will begin sustaining one Armor Unit of damage per second until the Heat Indicator begins to diminish.	

# Trace Augmentation Systems

# Weapon Systems

Weapons for a computer-based virtual world are somewhat different than those for reality, although their objectives are the same: to destroy a hostile entity. The destructive power that is given to computer constructs operates on the level of computer commands, which are essentially electronic signals. The weapons on a Trace, though given names straight from reality, actually do damage in quite a different manner....

... The harm these weapons cause is to the code, the timing, and the flow of instructions to a construct. By disrupting, destroying, rewriting, or delaying the internal commands that comprise a construct, these weapons can render that construct inoperative. In addition, these weapons can cause neural-electric feedback that can damage or kill the human operator of a construct. However, in order for a Netrunner to obtain reliable information about the weapons he is using, he needs visual input. Therefore, each time a weapon is fired, its data-destroying projectile appears to the Netrunner as a laser beam, or as a graviton pulse, etc.

### Proton Torpedoes

**Description:** Unique to the Trace, proton torpedoes were developed by Black Sun Corporation to give its Netrunners an added edge in the Sense-Net. The torpedo is actually a short burst of pure fusion energy capped with an independently-targetable seeker code to provide the deadly projectile with tracking capabilities. Once fired, the torpedo tracks its target with fatal precision, detonating with an undepleted feedback explosion that terminates or seriously damages the integrity of any construct. The feedback will melt encryption, fuse code, and cause traceback damage to the hardware that controls the targeted construct. Due to the amount of energy required to fire each torpedo, only one can be fired and controlled at any one time.

### Energy

<b>Consumption:</b>	250 EU
Damage:	200 Armor Units
Rate of Fire:	One at a time
Speed:	100,000 Kps

### Lasers

<b>Description:</b>	Developed by Vicrum in the mid-2290's, lasers were the first construct-based weapon used by	
	Netrunners. Even though the idea is old, the design has advanced over the years to match	
	increases in defense technology. Basically, the laser uses twin focused beams of amplified	
photonic radiation to concentrate intense bursts of sequence interrupters on the software cod		
	hostile constructs. This weapon has a rapid fire rate and causes moderate damage per shot.	

### Energy

Consumption:10 EUDamage:10-20 Armor UnitsRate of Fire:4 pulses per secondSpeed:100,000 Kps

### Particle Cannons

**Description:** Officially under development for Trace use, Melatincs Inc. developed this weapon system as a challenge to the decades-long dominance of Vicrum in the NetWeapons field. Enclosed in a compact system that only lightly burdens the Trace fusion core, the Particle Cannons utilize focused particle waves to cause molecular disruption to the circuit modulators of hostile constructs. The weapon offers better damage potential than the laser, but at a slower rate of fire.

Energon

Consumption:	15 EU
Damage:	15-30 Armor Units
Rate of Fire:	3 pulses per second
Speed:	80,000 Kps

### Gamma Beams

**Description:** Also under development for Trace use by the Vicrum Corporation. Using high energy gamma waves routed through a Charged Pattern Condenser, the Projector fires a short-burst, broad spectrum energy pulse. The pulse is capable of temporarily disrupting the neural-electric signal relays that link a construct with its AI or human controller. This weapon inflicts a good range of damage and has a fast rate of fire.

### Energon

<b>Consumption:</b>	25 EU
Damage:	25-50 Armor Units
Rate of Fire:	3.5 pulses per second
Speed:	90,000 Kps

### Proton Cannons

**Description:** In 2305, several new weapon manufacturing companies appeared on the GlobalNet with demonstrations of prototype NetWeapons. Ima-Gen Imaging Plant began offering sales of the Proton Cannons, the first real competition to Vicrum and Melantics Inc, though to this date, no official deliveries have occurred. The Cannons channel charged protons into a high energy pulse, directed using cyber-magnetically sheathed coils. The weapon is particularly effective in causing feedback damage to a deck or AI. Reportedly, it inflicts a good range of damage and has a good rate of fire.

### Energon

Consumption:	30 EU
Damage:	30-60 Armor Units
Rate of Fire:	3 pulses per second
Speed:	70,000 Kps

### Meson Blaster

**Description:** For its first effort in , I-Core has developed a product with slightly different parameters than its competitors. According to Black Sun corporate spies, the Meson Blaster sacrifices a good rate of fire for maximum damage effectiveness. The Meson Blaster utilizes charged superactive meson particles that are passed through a field compressor and focused into a tight beam. Because the meson particle is inherently unstable, once it penetrates the shielding of a construct it radiates its instability into the construct program causing serious degradation of most construct control commands.

Energy

<b>Consumption:</b>	50 EU
Damage:	50-100 Armor Units
Rate of Fire:	2 pulses per second
Speed:	50,000 Kps

### Tachyon Cannons

**Description:** Cyber-Gen's constructs burst onto the NetWeapons scene in 2306 with tandem products. The first of these is the Tachyon Cannon, which harnesses for the first time the power of a particle known for centuries. The T-Cannon directs an excited energy tachyon pulse using a Phased Particle Inducer. The T-cannon offers a fairly rapid rate of fire. In addition, because the tachyon particles vibrate at a rate much faster than light speed, the pulse also causes very high amounts of damage to the timing mechanisms of a construct.

Energon

<b>Consumption:</b>	75 EU
Damage:	75-150 Armor Units
Rate of Fire:	2.5 pulses per second
Speed:	80,000 Kps

### Neutron Cannons

**Description:** The second part of Cyber-Gen's lethal duo is the Neutron Cannon. By passing neutron emissions through a molecular convection lens, the N-Cannon generates a high frequency, high oscillation wave pulse that is capable of inflicting severe damage on the internal routines of a hostile construct. This weapon offers an extremely high damage potential, but sacrifices a high rate of fire.

### Energon

<b>Consumption:</b>	100 EU
Damage:	100-200 Armor Units
Rate of Fire:	1.5 pulses per second
Speed:	60,000 Kps

### Graviton Blaster

#### **Description:**

ption: More a legend on the Net than a legitimately reported NetWeapon. If the sometimes exaggerated tales of Netrunners are to be believed, by projecting graviton particles into charged matter streams, Ima-Gen has created a weapon capable of achieving unheard-of damage rates. If real, Black Sun scientists speculate that the graviton particle stream impedes the proper interaction of the subtle gravitational forces that exist within the hardware of a runner's deck or the Cray cells of an AI. Though the initial effect on the hardware is infinitesimal, it starts a chain reaction that escalates in a matter of microseconds into systems failures of key hardware components. The energy requirement necessary to fire the weapon must give it a very slow rate of fire: nonetheless, one hit from the weapon would be enough to doom all but the most heavily armored constructs.

### Energon

Consumption:	>125 EU
Damage:	>125-250 Armor Units
Rate of Fire:	~ 1 pulse per second
Speed:	~ 70,000 Kps

# Armor Systems

Because the Trace itself is purely a software-generated construct, it too is susceptible to harm to its coding, internal processes, and commands. To protect it, the Trace is surrounded with algorithmic encryption, feedback dampers, surge protectors, and other devices to repel or reduce efforts to destroy it. This protection is called armor, and its purpose is to protect the Trace and its driver long enough for them to penetrate a Corp's ICE and recover the targeted data.

### Armor Type I

### **Description:**

ption: In 2299, several years after Vicrum had released their weapon systems onto the GlobalNet, Fumatsu began marketing a shielding system to provide some protection to constructs against these weapons. Their premier armor system was the Defender Configuration, or Type I. Though adequate to the task some four or five years ago, the Type I fell behind the curve as other companies began introducing deadlier weapons systems. In 2305, Fumatsu re-released its Type I armor system, which incorporated a new neural-electric dampening buffer to provide a greater degree of protection. In addition, the Type I offered a fair degree of protection against the damaging effects of heat buildup. As a basic armor system, the Type I has maintained its predominance as the best-selling protection on the market. Aiding in its popularity is Fumatsu's commitment to annual updates to the system software that cost only a fraction of the armor system itself.

### Construct

**Protection:** 250 Armor Units

### Armor Type II

Description:	Seeing the burgeoning demand for construct protection, I-Core has undertaken a massive effort to
	begin a new subdivision for developing armor systems. Using its vast weapons development
	resources, I-Core has been attempting to assemble a shielding application superior to Fumatsu's
	armor package. The Guardian Armor Array, commonly referred to as Type II, is due to be
	released in 2307 to the Netrunner community. The Type II is supposed to employ a particle-
	inhibiting vibration transducer to reflect or reduce the penetration capabilities of particle
	weapons. In addition, it is also to provide some insulation barriers within the construct coding to
	prevent disruptions to command pathways. Lastly, the armor provides a better level of resistance
	to the effects of heat accumulation.

#### Construct

**Protection:** 500 Armor Units

### Armor Type III

### **Description:**

n: In an attempt to reestablish its predominance in the construct armoring market, Fumatsu has reportedly taken its original Type I design back to the drawing board. After months of comprehensive research and development, Fumatsu is planning to release its Aegis Protection System — called Type III by Netrunners — in late 2307. Though based on the neural-electric dampening buffer platform, the Type III is supposed to have added several new strata to construct protection. According to inside sources, the Type III armor incorporates Electromagnetic Anti-depletion Shielding to reduce the effects of feedback and high intensity oscillation waves. An Isolinear Memory Modulator will be worked into the mid-level insulating software to help repel or retard weapons with destabilization or rewrite capabilities. The Type III also utilizes a Graviton Synchronizer to protect hardware against traceback damage. Lastly, Fumatsu will add a Molecular Excitement Inhibitor to greatly reduce heat damage.

### Construct

**Protection:** 1000 Armor Units

### ArmorGen

**Description:** According to Black Sun corporate spies, Fumatsu's research for the Type III armor system has revealed the relationship between energy for propulsion and energy for construct protection. From this new understanding, Fumatsu is developing two single integrated applications for use with weapons constructs. One, designated ArmorGen, allows a Netrunner to transmute a unit of Energon from his construct's fusion core into an additional unit of armor protection. To be released for sale before the Type III armor in 2307, this new armor generation capability should give an added degree of protection to Netrunners by assuring them an armor reserve upon which they can draw if their standard defense systems are defeated.

### Energon

Consumption:1 EUConstructChanges 1 unit of Energon to 1 unit of ArmorRate:1 unit per second

### **D-Rez Shield**

**Description:** In the ever continuing race for a technological edge, I-Core is delving headlong into the search for a better way to defend constructs in the lethal environment of Mega-Corp cyberspace. Black Sun sources report that in a stroke of serendipity, I-Core researchers have discovered a minute weakness inherent in the fabric of the GlobalNet; a weakness that could not presently be

corrected else it would play havoc with the complex system of data conduits in the Net. After further research, I-Core discovered that the flaw created a condition that would allow a Netrunner to temporarily modulate the phase-space that a Trace's coding occupied. Through this deintegration, it may become possible for a Trace to move through any ICE unhindered for a period of several seconds: that is, the Trace could move through a Netlattice unaffected by objects in its path. Realizing the potential of this Deresolution Shield, several other corporations have attempted to raid I-Core's research banks with limited success.

Energon Consumption: 500 EU per use

**Duration:** 5 seconds

### Trace Propulsion and Energon Systems

Because propulsion systems are directly related to power sourcing, each Mega-Corp manufactures its own fusion cores for its weapons constructs. Since each Mega-Corp maintains its own Matrix Fusion Core, from which the Corp and all its hardware and software draw their power, propulsion system applications for constructs must be attuned to the frequency and amplitude of the Corporate's Central Fusion Core. To maximize power efficiency and to safeguard against any other Corp learning its Matrix Fusion Core settings, each Corp must design and develop its own propulsion systems.

### Fusion Core Type I

**Description:** Black Sun's designers used a Circuit Strength Catalyzer to form the basis for this power unit. Completing the design array is a Frequency Harmonizer and a Pulse Conduit Coupler to provide a strong flow of Energon to the Trace from the Corporate's Central Fusion Core. Standard on all Black Sun Trace constructs, the Type I offers good Energon storage capacity. Although the Type I is capable of powering the Trace and its armor with little difficulty, it would need to be upgraded to support any proposed higher-end weapons systems for any appreciable amount of time before its Energon stores are depleted.

Energon

Capacity: 5000 EU

### Fusion Core Type II

Description:	The Type II fusion core, once completed, will be essentially a modified Type I. Black Sun	
	researchers propose to add to the fundamental platform an Energon Excitement Enhancer that	
	doubles the power throughput capacitance of a Trace construct. The $E^3$ would smooth the	
	transfer of Energon from the Corporate's Central Fusion Core to the Trace, providing	
	substantially more Energon at a surprisingly even rate of flow. It is expected to be more than a	
	sufficient power source for the low power-use weapons, and also adequate for powering many of	
	the weapons under development that will require a slightly higher reserve of Energon. The Type	
	II fusion core is expected to be finished soon.	
Proposed		
Energon		

**Capacity:** 10,000 EU

### Fusion Core Type III

# **Description:** Even as the Fusion Core Type II is nearing project completion, researchers are working on a more advanced system, capable of enduring the substantial amounts of power drain necessitated by future weapons like neutron cannons and graviton blasters. The engineers at Black Sun hope that the Multiphasic Direct Line, sometimes called a Spurt Collider, will advance the corporation's technological edge. This theoretical invention would enable a Trace to receive its Energon via an electron tightbeam straight from the Corporate's Central Fusion Core. Since the electrons in the tightbeam are unevenly spaced they could cause some timing problems; to solve this, the Spurt Collider will collapse these spaces so that the electrons are stacked one on top of the other. By eliminating ragged spacing, the MDL will allow for a continuous, smooth flow of power. The Type III is expected to provide more than enough Energon to power the Trace and any present or future type of weapon system.

Proposed

Energon

**Capacity:** 25,000 EU

### ThermaCore

**Description:** According to data collected in a raid on the R&D grid of Melantics Inc., research is nearly completed on a proposed Energon Multiplier or ThermaCore. In the simplest terms, the ThermaCore is an Energon accelerator code that fits within the fusion core of a construct. By accelerating Energons from the construct's fusion core into a minute source of compressed splitting code, the ThermaCore will double the amount of Energon available to any construct, including the Trace. The end output will most likely be dependent on the Energon capacity of the fusion core.

#### Energon

Capacity: Doubles the EUs in the fusion core

### RamScoop

**Description:** It would appear that after extensive research, and no small amount of luck, Vicrum's engineers have recently discovered that an infinitesimal layer of Energon covers the surface of every Netlattice. The layer is comprised of free-floating Energon molecules shed by constructs as they pass over the surface of the lattice. Since no construct propulsion system is 100% efficient, some Energon remains unburned. This Energon residue collects on the surface of the lattice, held in place by the weak electromagnetic forces inherent to cyberspace. Surmising that this Energon could be collected and reused, Vicrum is building the RamScoop. The device, according to inside sources, uses a phased magnetic coupler to suck the Energon off the lattice surface and inject it straight into a construct's fusion core.

#### Energon

Capacity: 10 EU per second in contact with the Netlattice

### Afterburners

**Description:** Like any pilot flying in a hostile environment, speed can be the difference between life or death for a Netrunner. If a runner's Trace can outrun an enemy, then the runner's chances at survival increase. It is only logical that Corporations began pouring R&D funds into increasing speed. Black Sun developed its afterburner augment in 2980. Although the technology has changed some since then, the basic platform design remains the same. The current design, which premiered in 2300, utilizes three Graviton Stream Emitters to inject gravitons into the fusion core propulsion chamber. The gravitons interact with the Energon, breaking the bonds that hold each Energon particle together. By speeding up the decay of the Energon, the propulsion reaction can proceed much faster for a brief period of time, thus providing greater energy for propelling a construct through the Net. The process does however, increase the rate of Energon usage.

#### Energon

Consumption: 50 EU per second

Acceleration: Instantly thrusts the Trace to its maximum speed for a limited amount of time

## Thermal Coolant

- **Description:** In maneuvering any Netlattice, the greatest problem confronting a runner is heat accumulation on his construct. Enough heat can actually begin to damage the construct's armor and eventually its programming. To mitigate the effects of heat accumulation, Black Sun engineers are working to develop Thermal Coolant. TC is an application designed to disperse heat over the entire surface area of a construct, instead of allowing the heat to concentrate on the area of contact. Using an Apportionment Relay, the TC will enable a construct to bleed off heat more easily, thus quickening the cooling process and reducing the possibilities for heat-related damage.
- Effect: Reduces the rate of heat accumulation by 50%

### EnerGen

Description:	Fumatsu's research for the Type III armor system has revealed the relationship between energy	
	for propulsion and energy for construct protection. From this new understanding, Fumatsu is	
	developing two single integrated applications for use with weapons constructs, one of which is	
	ArmorGen. The other application, called EnerGen, will, when released, allow a Netrunner to	
	transmute a unit of armor protection into an additional unit of Energon to feed the construct's	
	propulsion system. To be released for sale to the general public in 2307, this new Energon	
	generation capability may give an added degree of propulsion to Netrunners by assuring them of	
	an Energon reserve upon which they can draw in an emergency.	
Energon		

Consumption:N/AConstructChanges 1 unit of Armor to 1 unit of EnergonRate:1 unit per second

## Energon unit

**Description:** As a Trace takes damage from heat or from Energon-depleting ICE defenses, its reserve of Energon Units decreases. As the number of units falls toward zero, the Trace becomes in danger of losing its ability to propel itself or to power its weapons and flight systems. Energon Units are used to refill the Trace's fusion core

Note: Black Sun Corporation will refill its Netrunners' Traces to full capacity after each successful run.

# Taking Damage

Because the Trace is basically a virtual construct generated by a software program, it is susceptible to various types of damage. However, damage manifests itself differently to a deck that it does to a Netrunner.

In terms of the Trace's interface with a runner's deck, the construct operates like any software program, though it is a lot deadlier. Like any application run over the GlobalNet, damage to the software can occur in many ways...

- The software code itself can be damaged, if pieces of it are systematically deleted or rewritten.
- The connections between the program and its environment which enable the Trace to interact with other program constructs or datafields in cyberspace can be disrupted or cut completely.
- The connections from a runner's deck to the Trace program can be broken.
- If the Trace program is being routed into the GlobalNet via a satellite link, the connections to the satellite can be broken, or damage can be done to the software or hardware regulating the transmission of data to the satellite.
- Commands from a runner's deck to the program can be intercepted, slowed, or rewritten in the midst of transmission.
- Deck functions themselves can be damaged or inhibited to prevent command transmission to the program; usually this is accomplished by feedback along a Trace transmission route.
- The Trace's connection to its power supply, the Corporation's Central Fusion Core, can be disrupted or damaged.
- Feedback can be sent through command lines, through the deck and neural link, or jack, directly into the brain of the person controlling the Trace; depending on the strength of the feedback, the results vary from mild neural stun to catatonia to flatlining.

To the Netrunner jacked into cyberspace through his deck, damage takes on an entirely different appearance. Because the neural jack provides total sensory perception to a deckdriver, damage is registered visually by indicators located in the cockpit and on the HUD. Since it is not possible for a runner to actually perceive the disruption of code or connections, he needs a different mode of calculating total damage to the Trace program.

Most important for the runner, is information about how much longer the Trace can maintain its construct integrity; that is, how long before the program is rendered unusable, and its operator suffers neural damage as a result. Consequently, Trace construct integrity is measured in terms of Armor Units.

Armor Units are essentially the complexity of code encryption and the vulnerability of program connections to the environment and to the runner's deck. The fewer the Armor Units, the more susceptible the Trace program is to damage or defeat: the more Armor Units, the more impervious. Logically then, as Armor Units decline from their level at launch, the closer the Trace and its driver are to destruction.

In the harsh cyberworld of Netrunning, numerous things exist to damage a Trace and its runner. When running any Mega-Corp or Global InterNet Polity Matrix, the danger is from ICE and from hostile runners piloting their own weapons constructs. These can inflict damage on a Trace in the following manner:

ICE Drone:	Dependent on the Drone; see section below.	
ICE Guardian:	Dependent on the Guardian; see section below.	
Heat:	Accumulates at 1 unit every second outside the lattice trench. After 10 seconds, the Trace	
	sustains 1 Armor Unit of damage per second. Returning to the lattice trench will reduce	
	the heat units by 1 per second.	
Collision:	3-10 Armor Units of damage per collision with a deactive ICE object. Damage is	
	dependent on speed, so the faster the Trace is moving, the more damage it will sustain	
	when it collides with an object.	

# Intrusion Countermeasures Electronics (ICE) —The Enemies

Data is money. If you have data that no one else does, you can use it to turn a profit. But once someone else has access to the same data, they can beat you to the marketplace and the money. To protect data from theft, Corps on the GlobalNet utilize Intrusion Countermeasures Electronics, also called ICE. There are basically two types of ICE.

Deactive ICE encompasses all non-lethal protection methods. D-ICE ranges from simple encryption, such as a child's seven character password for his edudeck, to sampled space noise algorithmic cyphers used on military field communications. It is designed to keep intruders from eavesdropping on data communications or from penetrating secret data stores. For those who run the GlobalNet, it often appears white or grey in color, and it typically works through the bounceback effect. If you contact D-ICE during a run, it will repulse you noticeably — like you ran head first into a brick wall. Most obstacles placed along the Netlattice are D-ICE.

Proactive ICE includes all debilitating and lethal protection methods. P-ICE falls into two categories: Drones and Guardians. A Drone is part of an AI-controlled automated defense system, and a Guardian is an AI- or human-controlled construct. Both are designed to kill or disable invading Netrunners. P-ICE, whether automated or not, can deliver neural-electric shock, rapid-action viruses, code scramblers, high amperage conduit burners, signal inhibitors, or other damaging elements, which either affect a Netrunner's construct, his deck, or his brain. Repeated contact with P#-ICE can destroy your Trace, and fry your brain in the process.

Manufacturers are constantly upgrading their ICE systems, so the configurations given below may become obsolete shortly.

## Proactive ICE - Drones

ICE drones are the weapons of an automated matrix defense system. Usually one AI controls the entire defense system, shifting the patterns and concentrations of ICE to best protect the matrix. AIs tend to place the greatest concentration of drones along lattice conduits, to protect unauthorized entry and egress along these permanent and necessary openings into a matrix. Drones range from lightly to heavily armored, and are configured with a wide variety of weapons capable of destroying or disabling a Trace.

### Mines

Manufacturer:	Each Mega-Corporation
Model:	Varies
<b>Construct Integrity:</b>	N/A
Speed:	0 Kps
Weapon Damage:	-10% of the Trace's total Armor Units

#### **Gun Turrets**

Manufacturer:	Every Mega-Corporation
Model:	Varies
<b>Construct Integrity:</b>	20 Armor Units
Speed:	0 Kps
Weapon Damage:	10 - 50 Armor Units
Racer	
Manufacturer:	Ichi-Tec
Model:	IT 7 ZM
<b>Construct Integrity:</b>	25 Armor Units
Speed:	8,500 - 15,000 Kps
Weapon Damage:	20 - 40 Armor Units

## Mamba

Manufacturer:	Def-Tech
Model:	DT Q0005
<b>Construct Integrity:</b>	40 Armor Units
Speed:	8,000 - 15,000 Kps
Weapon Damage:	25 - 40 Armor Units

## Viper

Def-Tech
DT 01A
50 Armor Units
8,000 - 15,000 Kps
25 - 50 Armor Units

## Asp

Manufacturer:	Arcon
Model:	ACI-115
<b>Construct Integrity:</b>	75 Armor Units
Speed:	8,000 - 15,000 Kps
Weapon Damage:	5 - 15 Armor Units

## Anaconda

Manufacturer:	Arcon
Model:	ACI-240
<b>Construct Integrity:</b>	100 Armor Units
Speed:	8,000 - 15,000 Kps
Weapon Damage:	10 - 20 Armor Units

## Shrike

Manufacturer:	Def-Tech
Model:	DT 330z
<b>Construct Integrity:</b>	110 Armor Units
Speed:	9,000 - 15,000 Kps
Weapon Damage:	10 - 30 Armor Units

## Cobra

Manufacturer:	Def-Tech
Model:	DT 902
<b>Construct Integrity:</b>	125 Armor Units
Speed:	8,000 - 15,000 Kps
Weapon Damage:	15 -30 Armor Units

### Venom

Manufacturer:	Ichi-Tec
Model:	IT 3 ZE
<b>Construct Integrity:</b>	150 Armor Units
Speed:	9,000 - 12,000 Kps
Weapon Damage:	20 - 30 Armor Units

# Proactive ICE– Guardians

The ICE Guardian is a weapon construct very similar to a Trace. Its purpose is to patrol matrix grids looking for intruders, or when necessary, it is used to penetrate the matrices of other Corporations. For most Mega-Corps, the Guardian is controlled by a single AI, although it can also be humanly piloted should the need arise. Guardians are normally used for rapid action deployment, to counter the threat of hostile constructs that have made it past the ICE drones and other automated protection systems. To fit this role, the Guardian is very heavily armored, outfitted with very powerful weapons, and often possesses special maneuver or camouflage abilities.

## A-11 GunStar

Description:	Manufactured by Ima-Gen Imaging Plant, the A-11 is a top rate matrix protector. When Ima-Gen first began selling the GunStar, in 2288, many Netrunners began to call it the Devil's Cross, due to its menacing shape. The GunStar has twin-mounted tachyon cannons capable of causing severe damage to the timing mechanisms of any construct on the receiving end of its barrage. In addition,
	the two power collectors located on opposite sides of the AI core create a static repulsor field capable of dispersing normal weapons fire. The collectors themselves are also protected.
Special Weapons:	Ima-Gen has fitted the Gunstar with two static repulsor field panels that are capable of reflecting all weapon fire back at an attacker. This capability is especially dangerous when an opponent is using high-yield weapons, since the panels reflect back the full destructive force of the weapon used.
Construct Integrity:	Lightly Defended
Weapon Damage:	1 - 15 Armor Units

# A-13 WidowMaker

Description:	Ima-Gen originally designed the WidowMaker for the exclusive use of the GlobalNet Polity.					
	Commissioned in 2287, the WidowMaker first saw use in protecting GIP intelligence and financial					
	grids on the Hub matrix. Within a few years however, the GIP began using the A-13 in an offensive					
	capacity to punish Mega-Corporations found guilty of trespassing on the GIP matrix or of acting in a					
	way detrimental to the well being of the GlobalNet. By 2290 however, the GIP had fulfilled its					
	purchase contract and Ima-Gen's sole market for the A-13 had dried up. Starting in 2291, Ima-Gen					
	began selling the A-13 on the common markets. The WidowMaker has a weapons array capable of					
	burning all the synaptic connections in a Netrunner's brain. Its main weakness is its lightly defended					
	propulsion system: destroy this and phased induction feedback will cause the A-13 to self-destruct.					
Special Weapons:	The WidowMaker's weapon array is supplemented with a particularly lethal system: guided missiles. Using a high-accuracy seeker code, these missiles will home in on an attacker, causing significant feedback damage to encryption algorithms and flight control codes.					
Construct Integrity:	Lightly Defended					
Weapon Damage:	1 - 20 Armor Units					

# Ichi-Tec Sentinel

Description:	Ichi-Tec created the Sentinel in 2297 as a watchdog for its own matrix, which had been repeatedly					
	penetrated during the late Eighties. Tired of watching Netrunners who were undaunted by the					
	presence of simple p-ICE drones grow bolder in their theft attempts, Ichi-Tec released the Sentinel					
	onto its matrix. In its first day of operation, this piece of ICE halted more than one hundred					
	seventy-five intrusion attempts, and flatlined eighty-three Netrunners in the process. The Sentinel's					
	AI core is armed with four fusion cannon platforms capable of slagging hardware circuits or					
	Netrunner gray matter. As long as any of the fusion cannons are active, the AI core cannot be					
	harmed.					
Special Weapons:	Ichi-Tec armed its Sentinel with Seek, Surround and Destroy projectiles. Using a multiphasic					
	detection array, the Sentinel determines the movement quadrant of its opponent. The SSDs are the fired in a pattern designed to pin down a hostile construct within a certain area of the Netlattice.					
	Once the hostile's movement is confined to a small area, the projectiles explode in proximity to the					
	hostile. Simultaneously, the Sentinel's other weapon systems are brought to bear on the small area					
	of confinement, thus increasing the damage inflicted on an attacker.					
-						
Construct Integrity:	Well Defended					
Weapon Damage:	1 - 25 Armor Units					

# Scythe Hunter/Seeker

Description:	Like Ichi-Tec, Solitech's Scythe H/S was developed to protect the Corporation's data stores					
	against unauthorized intrusion. While p-ICE Drones offered protection against most Netrunners of					
	the time, some exceptional runners were still penetrating Solitech's ICE. The Corporation was					
	losing tremendous amounts of data every day. To plug the holes being punched through their ICE,					
	Solitech released the Scythe onto its matrix. The Scythe's Multi-Directional Fire Acquisition					
	System proved too much for virtually all Netrunners of the day, sending many to their deaths.					
	Almost immediately, Solitech's intrusion rate fell by over ninety percent. Armed with these					
	successes, Solitech decided to market a slightly-modified Scythe to other Corps on the GlobalNet.					
	While the new version was not quite as deadly as the original (after all, Solitech could not give					
	away all its secrets to its competitors), its reputation kept sales high for years.					
Special						
Weapons:	In attempting to give the Scythe the ultimate edge, Solitech included a Dynamic					
	Deresolution Engine. The DDE enables the Scythe to temporarily modulate its phase space. Once					
	D-Rezed, the Scythe can continue to fire at an attacker, while remaining impervious to shots fired					
	at it. However, hostile constructs can inflict damage on a D-Rezed Scythe if they also possess D-					
	Rez capabilities.					
Construct						
Integrity:	Highly Defended					
Weapon Damage:	5 - 25 Armor Units					

## D-7 RazorSwift

Description:	The D-7 was Arcon's first attempt to satisfy the burgeoning market for p-ICE and matrix def					
	systems that sprang up in the late 2290's and early 2300. As its name implies, the D-7 possesses					
	considerable speed. Powered by a Spiraled Energy Conduction Engine, the RazorSwift is					
	extremely fast and highly maneuverable. The D-7's unique shape also gives it a substantial					
	defensive advantage since it is fairly hard to hit. Because of these features, the RazorSwift has					
	gained a reputation as the construct to use for covert data retrieval operations and reconnaissance.					
	Its speed makes it ideal for fast-grab and intel runs.					
Special						
Weapons:	Arcon devised a remarkably effective weapon for its D-7. Using a Code/Command Inhibitor,					
	the RazorSwift can temporarily block all incoming and outgoing commands to and from a hostile					
	construct. By blocking all commands for a period of up to several seconds the D-7 essentially					
	freezes a hostile construct in a condition of stasis; that is, the hostile construct cannot move, attack,					
	or defend itself. For several seconds the hostile is immobile and vulnerable to the D-7's other					
	weapon systems.					
~						
Construct Integrity:	Moderately Defended					
Weapon Damage:	5 - 30 Armor Units					

# D-9 Razorback

Description:	Arcon also developed the Razorback in response to the growing market for p-ICE. Seeing the				
	potential for dual purpose (offensive and defensive) p-ICE, Arcon created an AI-controlled				
	construct that was very heavily armored and supported a full complement of weapons. In addition,				
	the Razorback could easily be modified to carry hundreds of mines, useful for protecting a				
	Corporation's matrix, or for hindering operations in the matrix of an opposing Corporation. The				
	most vulnerable part of the D-9 is undoubtedly its gunports. Positioned outside of the armored				
	core, the gunports can be destroyed by concentrated firepower. Enough damage should overload				
	the AI circuits and destroy the D-9.				
Special					
Weapons:	When Arcon developed the D-9, it decided to arm the construct with two superior weapon				
	systems; the first is designed to render an opponent vulnerable and the second to destroy the				
	opponent. The Destabilization Device fires bursts of Incapacitance Code, which temporarily				
	overtakes the flight command structure of a hostile construct. In effect, the IC causes complete loss				
	of flight control. The second system, guided missiles, are used to seek out and destroy a hostile				
	construct while it is in the vulnerable state created by the Destabilization Device. This time-tested				
	combination has proven quite deadly.				
Construct					
Integrity:	Highly Defended				
Weapon Damage:	10 - 30 Armor Units				
Damage.					

# Def-Tech ShadowKnife

Description:	First encountered on the GlobalNet in 2305, the ShadowKnife is an eradicator of purportedly					
	fearsome capabilities. Few Netrunners have survived an encounter with one, and those that have					
	differ in their reports about its weapon systems and defenses. The best information available about					
	these constructs indicates that they are extremely well armored and use a weapon system similar to					
	the legendary graviton blasters arranged in tandem settings.					
Special						
Weapons:	When Def-Tech built its ShadowKnife, it incorporated a unique weapon system in the design.					
	Called the Leech by its developers, the Widebeam Energon Depleter drains large amounts of					
	energy from the fusion core of any hostile construct caught within the Depletion Ring. In addition,					
	Def-Tech borrowed two ideas from its competitors to roundout the ShadowKnife design. Seek,					
	Surround, and Destroy projectiles and ramming capabilities (see GL-1000) are also included in the					
	ShadowKnife platform.					
Constant and						
Construct Integrity:	Very Highly Defended					

Weapon Damage: 10 - 35 Armor Units

# GL-1000 WarStar

Description:	For its first endeavor into NetWeapons, Vulcan turned out a surprisingly excellent product. The					
	GL-1000 WarStar is a highly maneuverable, well-protected, and well-armed p-ICE construct.					
	Typically used to protect Corporate Fusion Cores or other essential properties, the WarStar is					
	fearsome in its presence. Its response time is unmatched, and it often appears unnoticed, surprising					
	and killing Netrunners before they have a chance to react. Although the system has been on the					
	market for only two years, many Corporations have praised its effectiveness in deterring intrusions					
	into their most sensitive grids.					
Special						
Weapons:	Vulcan took an entirely different tack when it designed the weapon system for its WarStar.					
	Instead of loading the GL-1000 with extra systems, Vulcan decided to turn the entire construct into					
	a very accurate guided weapon. Using its excellent speed and highly armored hull, the WarStar can					
	charge and ram an opponent, often before the opponent has time to react. Each collision causes					
	large amounts of damage.					
Construct						
Integrity:	Moderately Defended					
Weapon						
Damage:	15 - 35 Armor Units					

# A\H NetBlade

Description:	Mushitsu Corporation spared no expense in its manufacture of the A/H NetBlade, and as a res					
	its product's price tag is beyond the means of many Mega-Corporations. The NetBlade, relea					
	for sale in 2305, is undoubtedly the deadliest p-ICE construct on the GlobalNet. Armed with five					
	Peak Amplitude Neural Disrupters, the NetBlade can d-rez almost any construct on the Net.					
	Mushitsu tightly guards all information about the NetBlade, even when marketing the product to					
	potential customers. Only those Corporations that have purchased the NetBlade and the					
	unfortunate Netrunners who have engaged it know the full destructive capability of this p-ICE.					
	According to rumors, the ShadowKnife has cloaking capabilities, but this cannot be confirmed.					
Special						
Weapons:	Since few Netrunners have survived encounters with this piece of ICE, it is difficult to know					
	exactly its full capabilities. Some reports indicate that the NetBlade possesses a Cloaking Device					
	that renders the construct invisible for several seconds. Other reports indicate that the NetBlade					
	uses Code/Command Inhibiting weapons and a Destabilization Device. Since no reliable					
	confirmation is available on any of these abilities, all Netrunners should exercise extreme caution					
	when facing this cyber-juggernaut.					
Construct Integrity:	Very Highly Defended					
Weapon Damage:	>15 - 40 Armor Units					

# The GlobalNet Polity

Established in 2030 to provide nonpartisan management of the GlobalNet, the Polity evolved from a multinational bureaucracy into a private, semi-Corporate entity dedicated to the pursuit of profit. By controlling the entire GlobalNet and its operating policies, the Polity possessed considerable power.

By the end of the twenty-first century, the GlobalNet was the marketplace for business transactions. Every Corporation in the world stored and moved its data on the GlobalNet, and conducted its data-related business over the Net. Data was money, and the GlobalNet provided the means to move and collect data.

In spite of the enormous power it wielded, the Polity did not choose to expand its role into the world of international politics. Instead, the Polity set itself up as a neutral business entity interested only in the continued well-being of the GlobalNet and the continuous increase of its income.

Consequently, the Polity established the Corporate Tithe. For the privilege of conducting their business on the GlobalNet, Corporations that maintained a NetMatrix were required to pay a percentage of their profits to the Polity. In addition, Corporations were required to donate a percentage of energy from their fusion cores equal to the percentage profits that they tithed. Both money and energy went to feed the costs of maintaining the GlobalNet: whatever remained afterward went into the pockets of Polity executives. There was a fair amount of attention given to ensuring that plenty was leftover. Inexorably tied into the Net, Corporations had little choice but to agree to the maintenance fees.

Several years after the Tithe, the Polity created the Gai-Joku Net (later renamed the Gai-Joku Sense-Net when the Partial Neural Interface became available). With the rise of the Mega-Corporations— whose data stores and transactions were so large as to require vast amounts of Netspace unavailable on the standard GlobalNet — there came a need for a special arena designed to fulfill the unique needs of these economic goliaths. The Gai-Joku Sense-Net became the premier focus of business activity, where all of the major players built their matrices and competed for global economic domination.

To harness the energies of the Sense-Net for its uses, the Polity billed the Sense-Net as an exclusive club, limiting the number of Mega-Corporate matrices to eighty. Furthermore, the Polity reset the Sense-Net Tithe at a fixed figure plus a percentage of profits.

Mega-Corps flocked to the Sense-Net despite the high dues, because it was the center of global business activity. Operating on the Sense-Net gave these companies access to the competition, access to data and energy resources, and access to customers throughout the whole GlobalNet. Most importantly though, access meant more business, and more business meant greater profits.

With only eighty slots available, competition for membership on the Sense-Net is fierce. Since the Polity is interested in making money, it desires only the most profitable Corps as members. Those that fail to meet the standard are relegated to one of the other Corporate sub-Nets, where their access is second-rate. The Sense-Net has developed a logical pattern of interaction. Those Corps that maintain matrices on the Sense-Net work to sustain their position at all costs, while those Corps on the secondary sub-Nets utilize all the tools at their disposal to improve their profitability to the point where the Polity will offer them membership.

For its part, the Polity is interested in maintaining balance within the Sense-Net. If any one Corp were to become too large, it might begin to dominate the flow of data and money on the Net: such a situation might provide the Corp with the opportunity to challenge the Polity on matters of GlobalNet operations, or worse, on the Tithe itself. As a result, the Polity works to ensure that no Corp becomes too predominant, while striving to ensure that all Corps maximize their profits. This balance keeps the machine moving and profits growing. After all, money is the name of the game.

# Registered Mega-Corporations in the Gai-Joku Sense-Net: Year 2306

Biotech			
Dynam			
Symax VS			
Fujikawa			
Synth-Tech			
Dai-San			
Mega-Dyn			
Tengin			
DynStar			
Def-Tech			
Ninten			
Archon			
Meson-C			
Micronics			
Via-Net			
SensWare			

Black Rain Terra-Gen InCel **U-Genics** Tri-Len Uni-Sol In-Comm Gemstar Enigmatics Masutsha Dynastar Terranics Solenx U-Nex Mento Terra-Core Dolormyx Ichi-Tec Segashi Nihon-Cel Dyn-Gen Maelstrom Terra-Com Fuji-Syn **F-Psion** SynthSense Daitsu Yatsushita Synse Bio-Gen Cyber-Tec Null-G Vicrum Teng-En Bio-Tec Melantics Cyber-Gen Shimatsu

Akirasen Corex Sanyon Vulcan SynthGen Senden Ry-Karb Solarcom P-Synth Psi-Core **Dy-Genics** Microcel Benz ETS Dragon Solitech Com-Net Fumatsu Psymantics Soliton Ima-Gen Mushitsu I-Core InGen Tetsu-Gen Kurita Black Sun

# General Hints and Tips

# Is it really necessary to read all the mission briefings?

Yes and no. The basic mission briefings give you a feel for the game, provide the story, and suggest some tips for the mission, but the main information necessary for you to complete the mission can be found in Tactical Briefing. Tactical will tell you whether the mission is to capture or destroy an objective, the number of objectives, whether there may be ICE Guardians

to battle, and so on. Valuable intelligence can be gleaned from both of the mission briefings, but only the Tactical Briefing is mandatory for success.

### Why does a mission sometimes abort even when I do not hit ESC?

For missions that require you to capture or destroy a certain number of objectives in a specified amount of time, you may be aborted by Black Sun Systems Command if you miss an objective or if you run out of time on your ERCC. Monitor your ERCC and your Objective Counter carefully. If you are aborted, you will be able to rerun the mission to capture the remaining objectives that you missed on the first run. However, if you are aborted (or if you abort by using ESC), you will be penalized 10,000 credits, so fly smart.

### If I do not have enough available RAM or memory can I still play Delta-V?

Yes. However, you must use a boot disk. To create a boot disk, use the "Make Boot Disk" option in the Install Utility. The boot disk will boot your computer allocating the proper amount of memory and will start the game automatically.

#### What do I do if I don't have enough hard disk space?

If you do not have sufficient hard disk space, we suggest that you create enough space by backing up your current files and deleting those you do not need or will not actively use.

# For some reason the load time in the game is very long. Can anything be done?

Yes. We highly recommend that you run Delta-V with SMARTDRIVE or any other disk caching utility. We have found through testing that a disk cache can reduce load times significantly. For instructions on installing SMARTDRIVE on your PC consult your DOS manual or go to the directory with SMARTDRIVE (usually your DOS directory) and type:

#### SMARTDRV /?

You can also edit your config.sys file to include the following line, provided that you have SMARTDRIVE on your local hard disk:

#### DEVICE=C:\DOS\SMRTDRV.SYS<SPACE>C.

Using the above example and assuming that SMARTDRIVE is in your C:\DOS directory, you would enter the following into your autoexec.bat:

#### **DEVICE** = c:\dos\smartdrv.sys c

Keep in mind that Delta-V needs at least 600K of free RAM to run. SMARTDRIVE automatically tries to load itself into high DOS memory. This is correct. The problem arises when you are running many TSR's (Terminate and Stay Resident programs) in high DOS memory. If there is not enough space then SMARTDRIVE will try and load into low DOS memory, dropping your RAM total below the 600K minimum. This will not be enough to run Delta-V, and the game will crash. If you have many TSR's running, we recommend that you use the install program to create a bootable floppy disk. You can edit your autoexec.bat on the floppy disk to initialize SMARTDRIVE. This will ensure stable operation of the game.

### Is it safe to run Norton Speed Disk with Delta-V? Will it make a difference?

Yes. Norton Speed Disk is quite safe to run with Delta-V, and can speed up disk access time while playing the game. It is best to run Speed Disk after installing Delta-V to maximize the speed at which the game runs. Select Full Optimization when running this utility. Once the disk memory fragmentation has been repaired, you will find that the game will run faster and smoother, with less time spent while the hard disk searches for information.

#### The game runs too slow on my computer. What can be done?

Do you meet Delta-V's system requirements? The Minimum requirements are a 386 processor running at 33 Mhz. To improve speed you can set Poly Shading to LOW and turn off the sky. This can be done from the GRAPHICS CONFIGURATION section of the set-up menu.