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To: Whom it may concern (probably you!)
From: Stephen Clarke-Willson
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Re: CyberDome Notes

Overview of the game:

- 8 training levels
- 64 game levels
- 7 kinds of enemy ships - NOTE: each one of the approximately 450 enemy ships is individually tuned
- 5 weapons
 - Heat seeking missile - tracks into enemy ship if within a certain, large distance
 - Laser - more powerful than missile but requires direct hit
Laser and missile quantity is unlimited (displays as 999)
 - Flash bomb - more powerful than missile but requires near-direct hit
 - MIRV - Multiple Independent Retargetable Vehicles - splits into four missiles when close to an object or after a short time
 - Smart Bomb - launches out and then destroys everything on screen
- 5 powerups
 - All power-ups are wire-frame - but note some hardware cannot display wire-frame so power-ups might appear solid.
 - Partial Shield (green wire-frame sphere) -increase by 25%
Total shield is limited to 999%
 - Full Shield (yellow wire-frame sphere) - increase to 100% or 200%

If player ship is at 99% or less, player ship is set to 100%;

If player ship is at 100% - 199%, player ship is set to 200%.

- Cloaking (blue wire-frame sphere)- enemy ships are not aware of location of player ship
Enemy ships also do not avoid player ship so it is easier to accidentally run into enemy ships. Lasts 20 seconds.
- Invulnerable (magenta wire-frame sphere) - enemy ships can not damage player ship
Invulnerable overrides cloaking if both are picked up. Lasts 20 seconds.
- Extra ship (red wire-frame cube).

Controls:

- Keyboard controls:
 - Numeric keypad:
 - 1,4,7 - turn left
 - 3,6,9 - turn right
 - '*' - cycle through weapons
 - '/' - autotarget next enemy
 - '+', '-' - speed up, slow down
 - INS - shoot
 - Regular keyboard:
 - '/', 't' - autotarget next enemy
 - '=', '+' - speed up
 - '-', '_' - slow down
 - '*' - cycle through weapons
 - CTRL, SHIFT, Space - shoot
CTRL and SHIFT ignore the "typematic" rate imposed by the keyboard BIOS, and therefore are more responsive for shooting.
 - Alt-F4, of course, exits.
- Joystick controls:
 - Button 1 - shoot
 - Button 2 - autotarget next enemy
 - Button 3 (if present) - cycle forward through weapons

- Button 4 (if present) - cycle backward through weapons
For buttons 3 and 4, and '*' key, weapons with zero ammo are skipped.
- Direction pad -
 - forward, back - tilt down, up
 - right, left - turn right, left

Configuration Editor:

- CyberDome Configuration Settings (greatly enlarged for version 1.1):
 - Enable hardware acceleration - off by default, because of the wide variety of driver bugs and implementations.
 - Maximized display - off by default; the default size is a 400x300 window and works well on all P90 and above computers. You can turn this option on or you can hit the "Maximize" button (the little square one at the upper right) to go "full screen" at the current resolution of the display, but the game will still be running in a window.. On some display adapters there might not be enough display memory to support 3D at that resolution. If you have a 4 meg 3D board, then you can run at 800x600x16! For a 2 meg 3D board, 640x480x16 is the maximum recommended. A P200 probably looks okay in software only at 800x600x16 and should work on a 2 meg video board.
 - "Full Screen" display - this is Microsoft-talk for running in a mode that takes over the display of your computer and generally eliminates Windows from interfering with the game. In this mode, the graphics are displayed at 640x480x16 and there is no Windows interface present. **You can press Alt-F4 anytime to exit, or use Alt-Tab to switch away to other applications.** When you return to the game, there will be a slight (one to two second) pause while the drawing surfaces are reacquired. NOTE: this is the only way to get 3dfx VooDoo-based boards to accelerate the game, as they will not work in a window. If you have a 3dfx VooDoo-based board (like the Righteous 3D) and you think the game is running slowly, then make sure it is running "Full Screen."

- Simplified Dome - off by default; on some computers, particularly P100 or less with some 3D accelerators, the “geometry setup time” can exceed the benefit from the “rendering time” increase from the 3D card. Therefore, choosing “Simplified Dome” cuts down on the number of geometry transforms; on the other hand, some accelerators will convert the wireframe dome into a solid dome, which looks terrible, in which case you should forgo this option.
- Show Starfield - on by default; same as “Simplified Dome”: turning off the starfield can cut down on the number of the geometry transforms; also, some hardware accelerators do not support “point” display of objects, so you may have to use this option if the starfield displays as a solid white sphere when accelerated under hardware.
- Use textured starfield: some hardware cannot display “point” mode stars, but is very fast at painting textures (most notably cards based on the 3dfx VooDoo chipset, such as the Righteous 3D). In this case, you can get an interesting looking starfield by turning on this option; you must also have “show starfield” turned on.
- Use polygonal explosions - off by default; the Matrox Millennium does not support textures which are used for explosions, and so polygonal explosions can be used instead. Also, on some computers, there is a noticeable slowdown (a fraction of a second) while the textured explosions are created. On these computers you might prefer to have polygonal explosions. Game play will be a bit snappier. Also, some hardware accelerators abort (without any error messages) after a certain number of explosions occur; this can range anywhere from a couple of levels into the game to over 30! If this happens to you, after you stop yelling, switch to polygonal explosions.
- Lighted Explosions: Surprisingly, this seems to add very little overhead and makes the area surrounding an explosion light up when something blows up. Turning this off will speed up the game a little bit on really slow systems.
- Use Perspective Correction - off by default; there is no performance penalty in the “software only” version, but

many 3D accelerators slow down tremendously if this is turned on. You give up a little visual fidelity but not much.

- Use Texture Filtering - off by default; bilinear filtering of the textures drastically improves the explosion textures and should be turned on if your hardware accelerator supports it. It is off by default because it will drastically slow down the software-only renderer.
- Remove HUD: this will remove all the game status data from the display screen; if you are running in a window, the status display is moved to the small area at the bottom of the window where your current status can be read. If you remove this and are running "Full Screen", you'll have to guess how well you are doing, as there is no status bar present! This is generally recommended only for very slow boards and should only be used when in a windowed mode.
- Turn off background textures: These are the patterns or title screens displayed behind the text (which is actually 3D, hence the shading), and you're not missing much by turning these off. These work fine in software-only rendering but seem to break virtually every hardware accelerator. In fact, since so much hardware is broken, as soon as you choose to enable hardware acceleration (if present), background textures are turned off as well.
- Enable joystick - on by default.
- Calibrate joystick every time - on by default. If the player's joystick is of good quality and relatively stable, then the player can turn this off and skip the calibration stage at startup.

Note: pressing 'Skip' on the first calibration screen will also reuse the existing settings for the joystick.

Note: if the joystick doesn't have a sufficient range of motion, the joystick calibration screens will reject the calibration. The player can choose "recalibrate" to try again or 'skip' to ignore the joystick altogether. Usually, the joystick will fail to have a sufficient range of motion because the player simply failed to move the joystick correctly, and recalibrating will fix the problem.

- Play Startup Movie - on by default; turn off to speed startup time.

- Enable command line options - off by default, since the command line options aren't generally documented. Turn on to allow special processing at startup. This is the only way to enter cheat codes.
- MIDI music - play music through sound card
- CD Audio - play music from CD, but be sure to place CD in drive. Behavior with multiple CD drives is not defined; the player must place the CD in the correct drive.
- No music - sound effects only.
- Save button - save settings in registry.
- Cancel button - do not save any changes in registry.

Trouble Shooting

- Explosions look like white or black squares - the video card does not support textures (Matrox Millennium); select polygonal explosions.
- Explosions looked okay, but suddenly look strange later in the game: the 3D video driver is broken; select polygonal explosions.
- Explosions look okay, but after some number of levels the game either hangs or exits without any error messages - the video driver is broken - select polygonal explosions.
- Explosions look okay, but after some number of levels the game gives an error message something like this: "The cooperative level has already been set." - the video driver is broken, select polygonal explosions.
- Background is one solid color - your driver doesn't support either "point" display mode and therefore is displaying the star field as one solid color; OR, your driver doesn't support wire frame mode, and therefore is displaying the "simplified dome" as one solid color. Turn off the star field and do NOT use the simplified dome in this case.
- "Unable to create surface"; generally caused by trying to run at too high a screen resolution - try 640x480x16 if you have a 2meg card and 640x480x8 if you have a 1meg card. Note: the minimum size required for 3D acceleration is 2megs.
- Objects sometimes appear in the wrong color; this is a Direct3D™ bug that shows up sometimes on 8-bit (256 color) displays. Try to switch to 16-bit graphic mode if there is sufficient video memory.

- Joystick disappeared - DirectX 3 installation seems to disable joystick; reinstalling joystick driver from vendor or Microsoft Windows 95™ disk will fix it. This appears primarily to people who are upgrading from DirectX2 to DirectX3.
- **Secret method for installing CyberDome without installing DirectX:** You would want to do this when you've carefully downloaded the latest drivers for your hardware and you don't want the DirectX install program to change any of your settings. Run "Setup" directly from the CD-ROM from an MS-DOS command window, with the "-nodx" option, like this: "C:> setup -nodx"; use this when you like the way your system is set up (DirectX 2 or DirectX 3) and you want to be sure that the CyberDome install does not overwrite your drivers. CyberDome is designed to work best with DirectX3 but in limited testing has worked well with DirectX 2 as well.
- **Another way to avoid installing the DirectX subsystem:** Press SHIFT when clicking "Next" the first time (after specifying the install directory); this will skip DirectX installation.
- To save 8 megs of disk space, it is okay to delete the opening movie, called "startup.avi". It is not necessary to turn off "Play Startup Movie"; if it's gone, it won't play and no errors will be reported.
- **DEBUG VERSION:** If you are running the "debug" version of CyberDome there are special options available during game play. (Secret: You can enable the debug version by using the command line option "-edit".) This is an unsupported features - and if you give it a try I recommend you run in a window and not 'FullScreen'. CTRL and SHIFT are not available for firing weapons. If you click on an object with the mouse, the game will freeze and then you can make modifications to the object under the "Object" menu. To continue the game, choose "Object->Deselect". You can alter the display properties (wire-frame, flat, gouraud) or change the texture. Experiment. Under the "Scenes" menu you can change various hardware characteristics. Experiment. You can hit "i" (lower-case "eye") to give yourself weapons, and "t" (lower-case tee) to give yourself ships. **This is a completely unsupported mode.**

Game notes:

- “-demo” option on command line now goes directly to demo - for trade show use (skips all interaction except option to run configuration editor).
- When weapon count goes to zero, the new weapon chosen is the next available LESS powerful weapon, instead of the other way. This way you don’t accidentally use up your more powerful weapons.
- Also, the smart bomb is never automatically chosen so you don’t use it accidentally.
- There are now some command line options to aid testing or for cheating:
 - “-level xx” or “-l xx” pretends level 1 is level xx, so once you complete level 1, you will jump to level “xx + 1”.
 - “-ships xx” or “-n xx” gives you xx ships.
 - “-p nnnnn” gives you nnnnn points.
 - “-infiniteguns” will never decrement your ammo counter.
NOTE: you still must pick up the appropriate weapon power-up at least once before you can fire the weapon.
 - “-infiniteives” will never decrement your ship counter.
 - “-invulnerable” configures the game so you will never die.
Well, almost never. There seem to be times when you can ram into one of the star-shaped enemies and die - so be careful! Of course, between “-infiniteives” and “-invulnerable” you shouldn’t have too much trouble.
 - “-nodeath” is an earlier version “-invulnerable” you might want to try. Or combine it with “-invulnerable” as this might correct the one known case where you can die. After all, if you’re cheating, you might as well cheat all the way.
- Note: press escape to skip the intro movie if you want.

Changes for version 1.1:

- New “lighted explosions”.
- Runs “Full Screen” (and therefore supports 3dfx VooDoo based cards).
- It is possible to turn off the HUD.
- There is a textured star mode (mainly for the VooDoo).

- Background textures (for dialog boxes) can be turned off (background textures in dialog boxes broke many cards).
- You can set the difficulty level from the configuration editor or from the command line: -easy (hits to your ship are ½ strength); -normal; -hard (hits to your ship are twice normal strength!). -hard is very hard. For that matter, -normal is pretty hard.
- A bug that prevented 10-button joypads (like the new Microsoft Sidewinder Gamepad) from initializing and therefore crashed the game has been fixed.
- The simulation is more accurate on systems with a slow frame rate.
- The game runs much faster on slower systems (P120 and below) when lots of bullets are present.
- There was a ship you could only kill with a smart bomb on level 34; this has been corrected. (It was too close to the dome and your missiles would disappear before hitting the ship.)
- The first screen used to display in two sections - the title and then the copyright. This broke lots of hardware so everything displays at once.
- There is a new (one second) delay between levels so the computer voice doesn't step on her own speech.
- You can leave textures turned on but turn off separately background textures for dialog boxes that break so much hardware. (In fact, just enabling the hardware will do this, since virtually every driver crashes from this. It appears to be an interface problem in Direct3D.)
- The main dome is textured.
- You can turn on the status line and turn off the HUD (recommended for windowed modes only) (command line: "-nohud").
- There was a very rare timing bug where you might die and see the "Game Over" screen and then return to the game, dead in the water. This has been corrected.
- The power-ups have all been changed to wire-frame for simplicity; in addition, for those accelerated video boards that can't display wire-frame, each power-up has a unique color to help identify them if there are displayed as solids.
- Note: there is additional score information hidden in the registry: visit HKEY_CURRENT_USER\Software\AtGP\CyberDome\Scores to see more statistics on how well you've done.

3D Driver Tips:

- Many drivers arbitrarily die because of the hard work required to show multiple textured explosions. This is severely annoying because it results in the game locking up. **To test your hardware to see if this happens without playing the game just to see it crash**, set your hardware up to display textured explosions and then let the demo mode run for a couple of hours. If it runs for over two hours, then you are unlikely to have a problem playing the entire game. The game has been tested for over eight hours in the software mode and with the 3dfx VooDoo Direct3D driver, so if the game dies on your driver, it is a driver bug. THE FIX: use polygonal explosions and complain to your hardware manufacturer. There are very few games that really stress the hardware as much as CyberDome so encourage your hardware vendor to use CyberDome to test their drivers. The only verified drivers that work reliably with textured explosions, as of TODAY, Monday, January 06, 1997, is the 3dfx driver and the built-in software drivers. Your mileage may vary as new drivers are created and released all the time. All other drivers we've tested (S3, Matrox, PowerVr, ATI Rage I & II) run for hours with polygonal explosions.
- Several hardware drivers refuse to run the game more than once without rebooting the computer. This is very annoying as you might imagine. The symptom is that you will get a "wait" cursor when you try to run the game again, but no window will be created. After a few seconds the "wait" cursor disappears and that's that. There is a program called "Killhelp.exe" which will kill off the DirectDraw helper program and let you run again, but I'm worried that it is protected by license agreements with Microsoft so I haven't included it. Also, you could do some damage with it if there is more than one DirectDraw program running. Still, you might want to hunt around on the Web for it - someone may have illegally posted it somewhere - or perhaps Microsoft will purposefully make it available. In the meantime, I may get around to writing one that does the same thing, so check the Above the Garage Productions web site from time-to-time, at <http://www.atgp.com> .
- Speaking of software drivers, Direct3D comes with two: the so-called "Ramp" or monochrome driver and so-called "RGB" or full-color driver. The monochrome driver isn't really just one-

- colored but it does use internal tables to simplify color calculations. It is generally faster to use unless you have hardware acceleration. This is the default case for non-accelerated computers. If you happen to have an MMX compatible computer, you might want to try RGB mode, which runs faster than Ramp mode because of the use of special MMX instructions that allows the computer to calculate the entire color spectrum (Red, Green, Blue - hence "RGB") at once. You might also want to try it if you have a very fast (P200 or higher) Pentium or Pentium Pro. TO ENABLE: use the command-line prompt and enter the option "-rgb".
- There are a number of files called "something.reg" on the CD-ROM. These files will pre-load the registry with settings that, at the time of this writing, given the current hardware drivers, will enable a particular card to work with CyberDome to the best of its ability. All you need to do is to double-click on one of these files and the registry settings (which are what you are editing with the Configuration Editor) will be modified for that card. Generally speaking, the situation over time will tend to get better, so if you like, after using one of these files, you can use the Configuration Editor to selectively enable additional features when you get a new driver in order to test out the capabilities of the new driver.
 - Special note on 3dfx VooDoo-based cards: This is only card, as of this writing, that can handle the textured star field. Amazingly, software drivers on fast machines in reasonably sized windows (you have to test this yourself) can often display the textured star field when an accelerated card can not. (Kind of a bummer, eh?) The 3dfx card looks really great with the following settings: textures on, perspective correct textures on, filtered textures on, fullscreen (the only way it will work), hud on, show starfield on, use textured starfield on, use high-color textures on, lighted explosions on, ..., and I think that's everything. You might also try those settings on a P200 in a 400x300 or 640x480 window.
 - An annoying trait of many drivers is an inability to gracefully switch from an 8-bit (256 color) desktop mode to 16-bit mode full-screen without messing up. If you think this might be affecting you, try setting your desktop color depth to the same color depth you want to run the game.

Game Tips:

- Overall, this is a difficult game. You can make it much easier with the “-easy” command line option or “Easy” choice in the Configuration Editor. If you’re good - really good - you can finish the entire game (all 64 levels) in a little over an hour at the normal settings. Nobody has completed the game (yet) on hard.
- Use the first few levels to master the auto-targeting. You’ll know you’re good at it because you’ll make it up to around level 20. Then things get harder again. At level 20 you’ll have the opportunity to start collecting lots of life power-ups. You can collect about four extra lives in level 20. What you should do is to collect three of them and then allow yourself to be killed. This will let you restart the level and collect another three lives. Do this any number of times until you feel you have enough lives to finish the game. There are other levels with ship power-ups (try to figure out the scenes.scw file if you want to find them - it’s a text file), but this is the easiest place to collect them. NOTE: you’ll have to give up all your hard-earned health to do this - it’s worth it.
- NOTE: editing the scenes.scw file may make it unusable! It will certainly eliminate any possibility of customer service from MMI!
- Save your smart-bombs for times when you just can’t hack a level.
- In some of the levels where the ships are flying very fast, the best way to attack them is to figure out where they are flying, and then fly the opposite direction, toward the ship. So if a ship is flying in a circle around the dome, get a feel for the pattern, and then fly the opposite direction. This gives you the most time to target the ship and let loose some heat seeking missiles, MIRVs, or bombs. (Of course, try to avoid a head-on collision.)
- In some levels, some of the ships start out close to you, and auto-targeting them (as in the 3rd training level) will cause a lot of damage. The easiest way to get the situation under control (use this in the 8th training level too) is to hit the auto-target key or button several times in a row - this will point you toward a ship that is far enough away from you that you’ll have some time to think about what you’re doing and usually fly you away from the nearby ships.
- Good luck!

For more information, visit the Above the Garage Productions World Wide Web page at <http://www.atgp.com>.