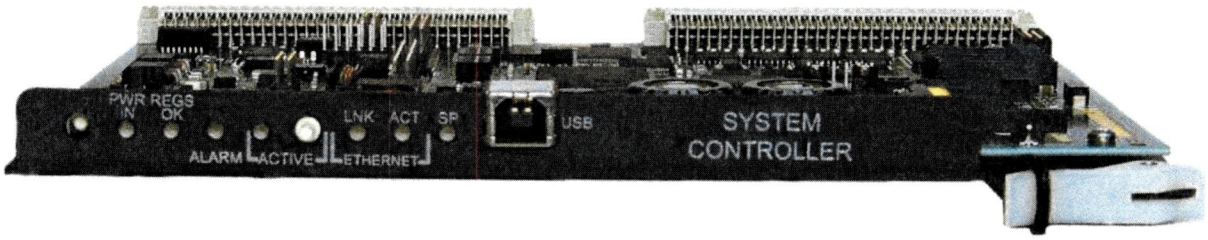
QuStream
PESA FORTELDTV

Technical Bulletin

PERC2000 System Controller
PERC1000 Frame Controller
DRS Operating Software

In-Field Firmware and Software Update Procedure



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CATS
Cheetah Advanced Technology Systems

1.0 Introduction

This QuStream Technical Bulletin presents a procedure for in-field firmware and software updates to the PERC2000 (P2K) System Controller, the PERC1000 (P1K) Frame Controller and the operating software on all DRS boards. These updates add features and functionality to the P2K GUI application, implement a method of setting IP addressing on the P1K modules directly from the P2K GUI, add new functions, improvements and updates to the DRS audio router and other critical updates to the P2K system.

It is IMPERATIVE that you follow the procedure in this document in the order presented and perform the steps exactly as written. Variations to this procedure can cause severe damage to the equipment and result in erroneous operation or render the equipment completely inoperative!!

QuStream HIGHLY recommends that you read through all the steps of this procedure to familiarize yourself with the scope of work BEFORE you begin performing these procedures on actual hardware.

2.0 Update Procedure Overview

A complete update consists of performing the following procedures in the order presented:

- Retrieve update files from the QuStream web site, store these files in a dedicated folder on the local hard drive of the host PC and launch the newly downloaded P2K GUI application.
- Save the current P2K configuration and matrix preset data to files on the host PC for later retrieval.
- Perform the firmware update procedure on the P2K system controller through the updated GUI and clear the contents of on-board non-volatile memory.
- Perform the firmware update procedure on all P1K frame controllers in the system.
- Perform the software update procedure on all DRS DXE core boards and audio I/O boards.
- Reload the saved configuration and matrix preset data to the P2K System Controller.

Time to complete all steps of this procedure will vary, depending on the number of system devices to update. On average, you should plan on a minimum of 4 hours system down-time to complete this procedure. Your time invested in performing this update will be well rewarded with the new functionality and features it brings to your system.

Each paragraph below contains a step-by-step procedure for updating the device. A check-off box is provided by each step. Place a check in the box upon completion of each step so that you do not miss a step. The order of performing these steps is critical to a successful outcome of the procedure.

3.0 Equipment Needed

You will need a Windows™ based PC connected via an Ethernet connection to the P2K to update.

4.0 Preliminary Steps

Prior to beginning the actual firmware/software update procedures, perform these preliminary steps. Check off each step as completed:

☐ 1. Make a folder on the host PC where you can store the files needed for completion of the updates. What you name this folder is up to you, but be sure that there are no other files in the folder that might be confused with the update files.

☐ 2. Make four subfolders, Figure 1, within the newly created folder and name them: P2K GUI, P2K PBN, P1K and DRS.

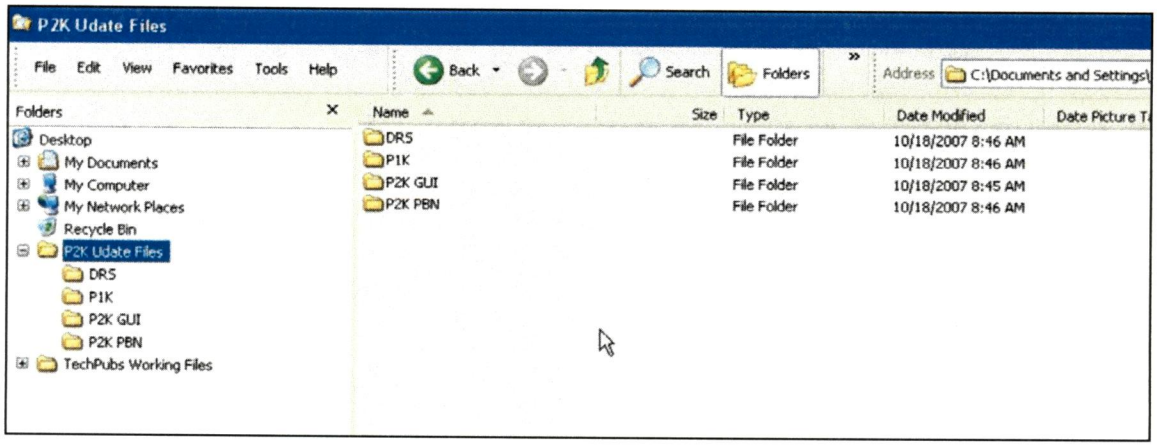

Figure 1. Update File Folder Structure

☐ 3. Open a browser window to the QuStream website, www.qustream.com, Figure 2. Select the Software Downloads option from the Support menu listing. Download the following file from the Software Downloads listing to the folder you just created:

P2K_DRSUpdate1007.zip

Once this single file is downloaded from the website, unzip this file into the folder. The following four .zip files are contained in the P2K_DRSUpdate1007.zip file:

PERC2000_V2_0_PBN.zip
PERC2000.zip
P1k_app_v2_0.zip
CustomerUpdateImages.zip

After the four .zip files listed above are extracted from the downloaded .zip file, you may delete the file P2K_DRSUpdate1007.zip from the folder.

Figure 2. Location of Update Files on QuStream Website

☐ 4. Unzip the file **PERC2000.zip** to the folder labeled P2K GUI. Verify that the following file was unzipped to the P2K GUI folder:

PERC2000.exe

☐ 5. Unzip the file **PERC2000_V2_0_PBN.zip** to the folder labeled P2K PBN. Verify that the following files were unzipped to the P2K PBN folder:

P2KMainBoot_V2_0_10-9-2007.pbn
P2KMainDebug_V2_0_10-9-2007.pbn
P2KMainApp_V2_0_10-9-2007.pbn
P2KRTCPUboot_V2_0_10-9-2007.pbn
P2KRTCPUcopy_V2_0_10-9-2007.pbn
P2KRTCPUburn_V2_0_10-9-2007.pbn
P2KRTCPUApp_V2_0_10-9-2007.pbn

☐ 6. Unzip the file **P1k_app_v2_0.zip** to the folder labeled P1K. Verify that the following file was unzipped to the P1K folder:

p1k_app_v2_0.pbn

☐ 7. Unzip the file **CustomerUpdateImages.zip** to the folder labeled DRS. A subfolder named CustomerUpdateImages will be created under the DRS folder. Verify that the following files were unzipped to the CustomerUpdateImages folder:

Cust-AesInput_Rev11_4_7-20-2007.pbn
Cust-AesOutput_Rev11_4_7-20-2007.pbn
Cust-AnalogInput_Rev11_3_7-20-2007.pbn
Cust-AnalogOutput_Rev11_3_7-20-2007.pbn
DXE_Rev12_8.pbn

☐ 8. Open the folder labeled P2K GUI and double click on the file PERC2000.exe to launch the new P2K GUI application. You will use this new GUI application to complete all steps of this procedure. The new GUI home screen is shown in Figure 3.

☐ 9. Click on the "Connect to Controller Symbol," Figure 4, to bring up a box with all P2K controllers listed by IP address. In most applications there will only be one controller listed. Select the P2K you wish to update from the list, by IP address, and click to activate the connection between the GUI and the controller. Once activated and communication is established, the IP address of the P2K appears in the box to the right of the connection symbols and the box is highlighted green to indicate the connection is functional.

☐ 10. Proceed to Paragraph 5.

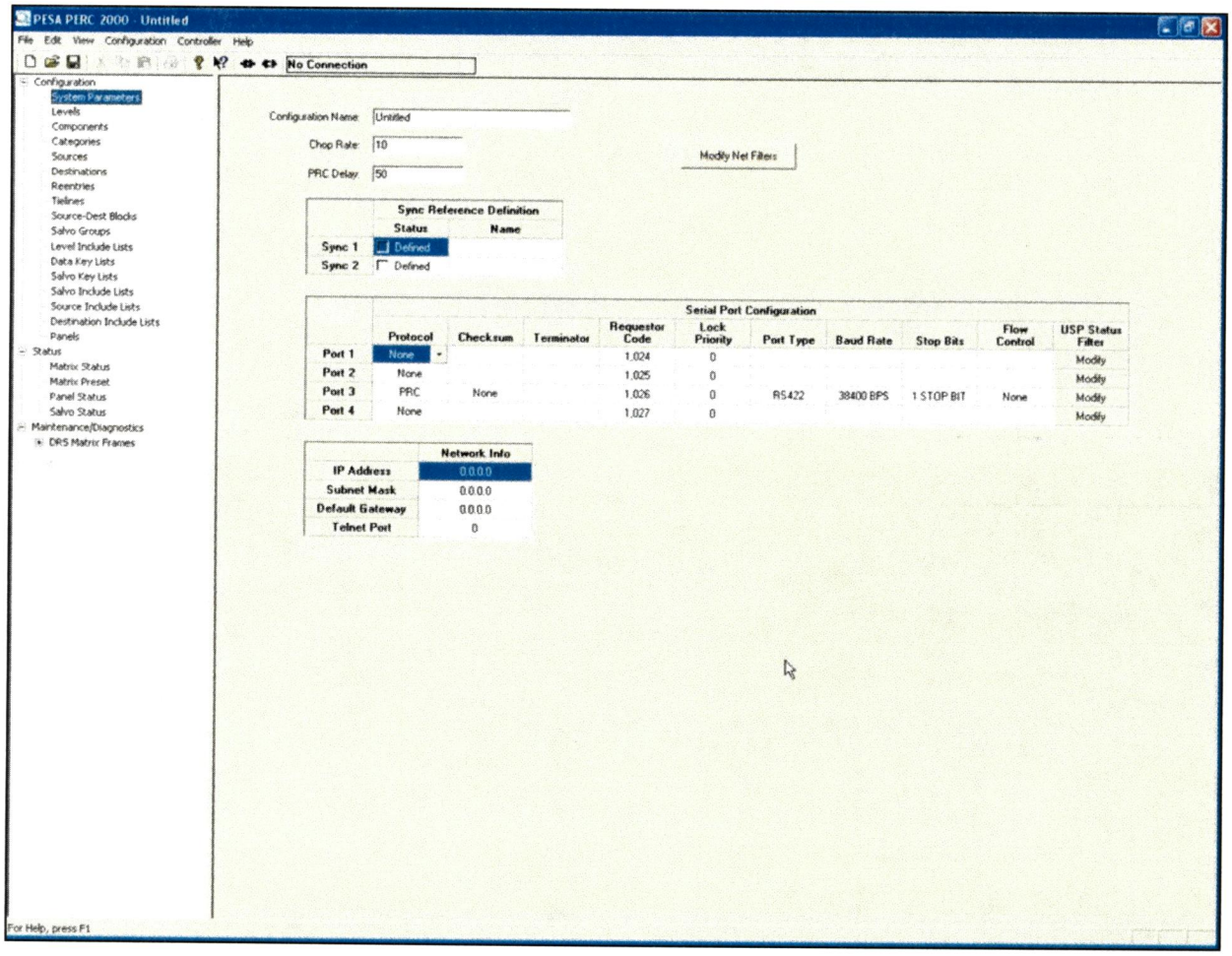

Figure 3. P2K GUI Home Screen

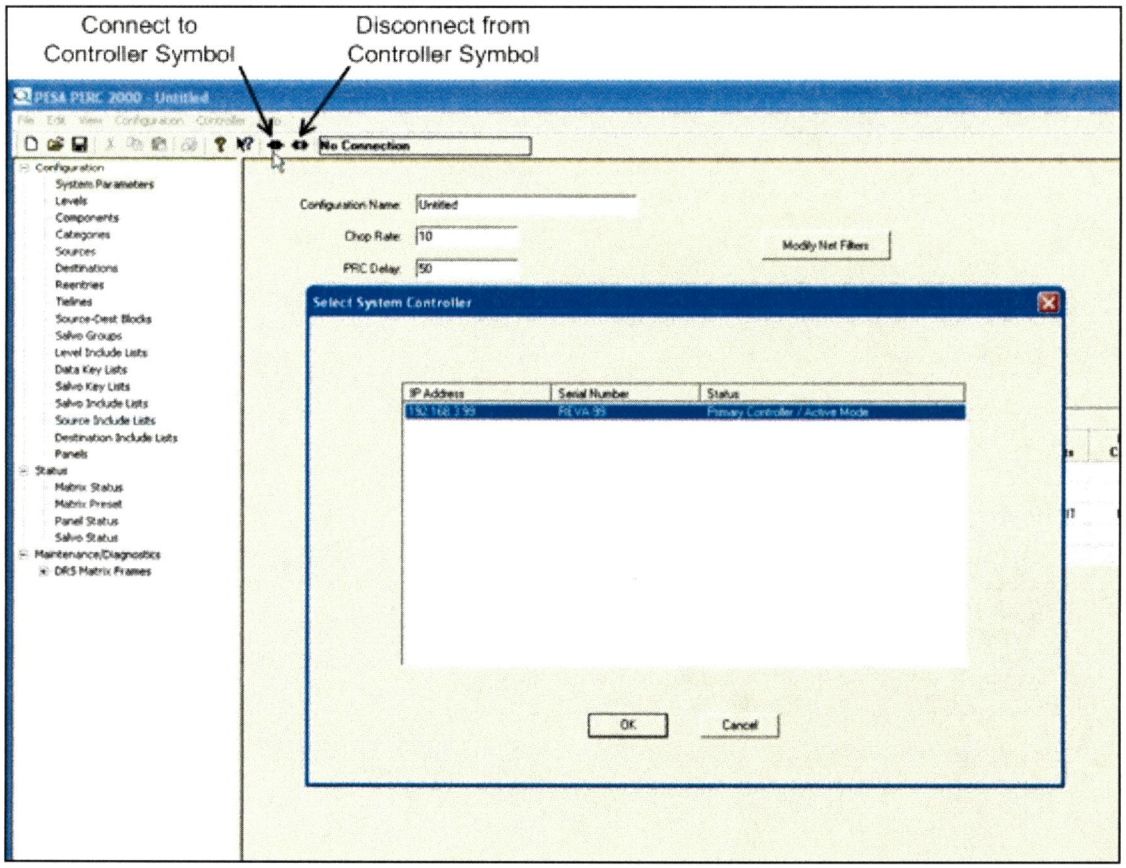

Figure 4. System Controller Selection

5.0 Save Current P2K Configuration and Matrix Preset Data

☐ 1. Ensure that the IP address of the P2K you wish to update is displayed by the Controller Active box and that the box is highlighted green to indicate a functional connection, as shown in Figure 5. If the box is not green or the indicated IP address is not correct, repeat steps 8 and 9 of Paragraph 4 before continuing.

☐ 2. The following steps generate a file of the current configuration loaded into the P2K and a second file containing the current status of the matrix. DO NOT SKIP THESE STEPS!! Save these files into a folder on the host PC for later retrieval. Once the update is complete, these files will allow you reload the controller configuration and return the matrix crosspoints to their current status. In our example screens, the files are saved into the folder created for the update files. This is a convenient place to store the files, however, you may write these files to any folder you wish – just be sure you can retrieve them easily when needed.

☐ 3. Click on the File menu in the WIndows™ menu bar and select the "Upload From Controller" option from the menu as shown in Figure 5.

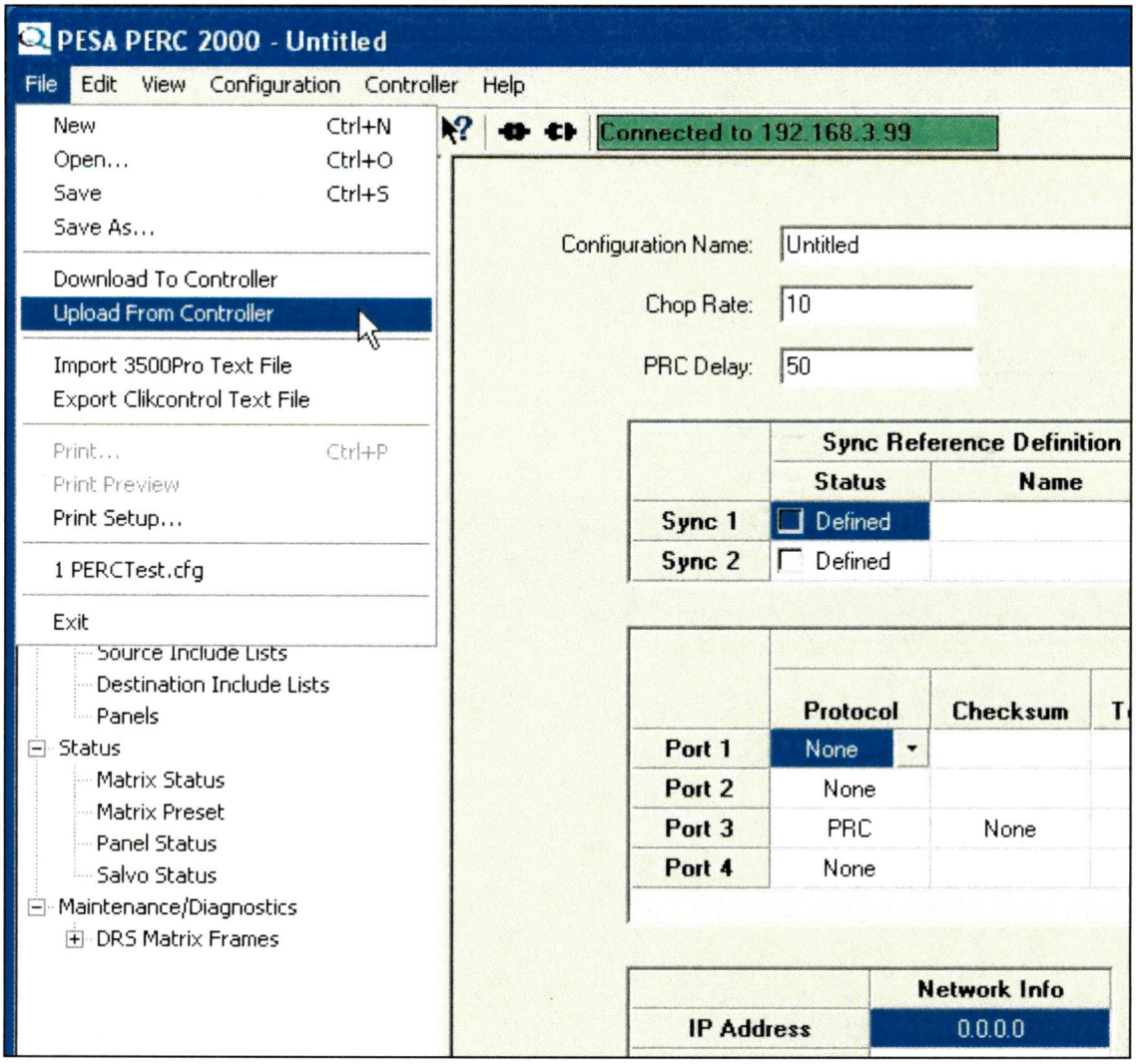

Figure 5. File Menu Listing

☐ 4. The dialog box shown in Figure 6 will appear. Click **Yes** to proceed with the configuration upload.

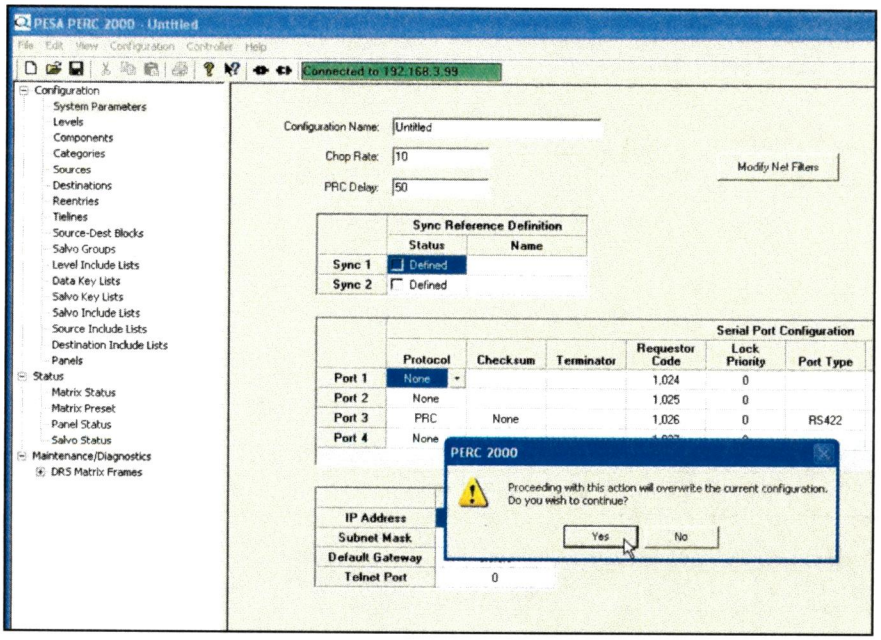

Figure 6. Caution Dialog Box

☐ 5. Once the configuration file is uploaded to the PC, the dialog box shown in Figure 7 will appear. Click **OK** to clear the box.

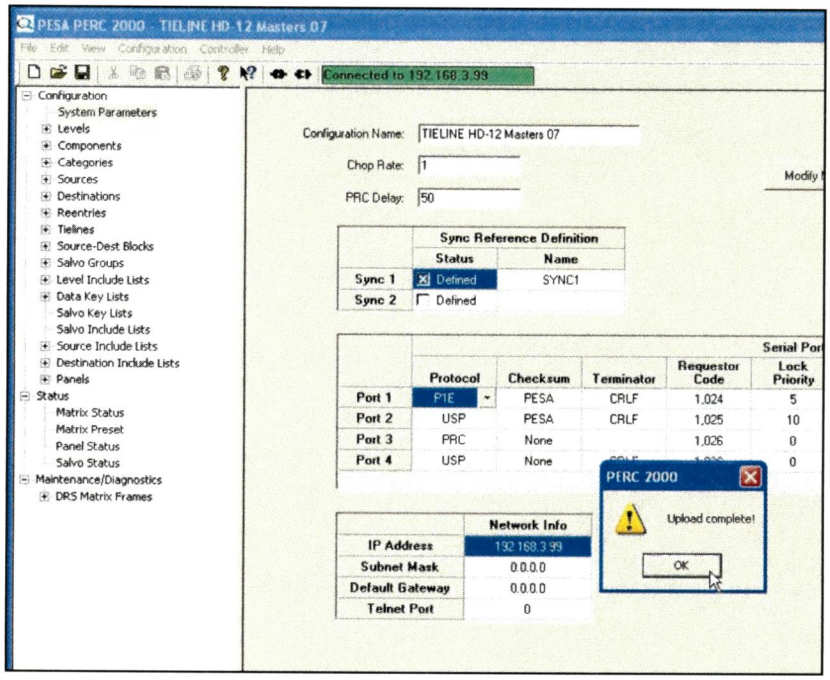

Figure 7. Upload Complete Dialog Box

☐ 6. Click on the File menu in the WIndows™ menu bar and select the **Save As** option from the menu as shown in Figure 8.

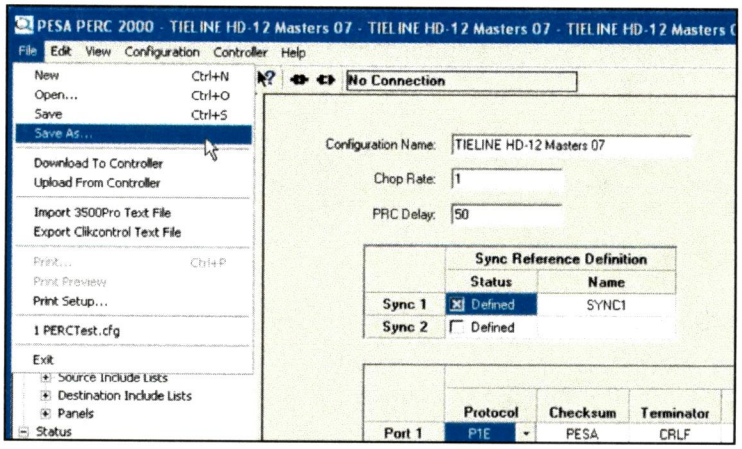

Figure 8. Save As Command Location

☐ 7. The Save As box, Figure 9, is displayed. Select a folder for the file, give the configuration file a name and click **Save** to save the file on the host PC.

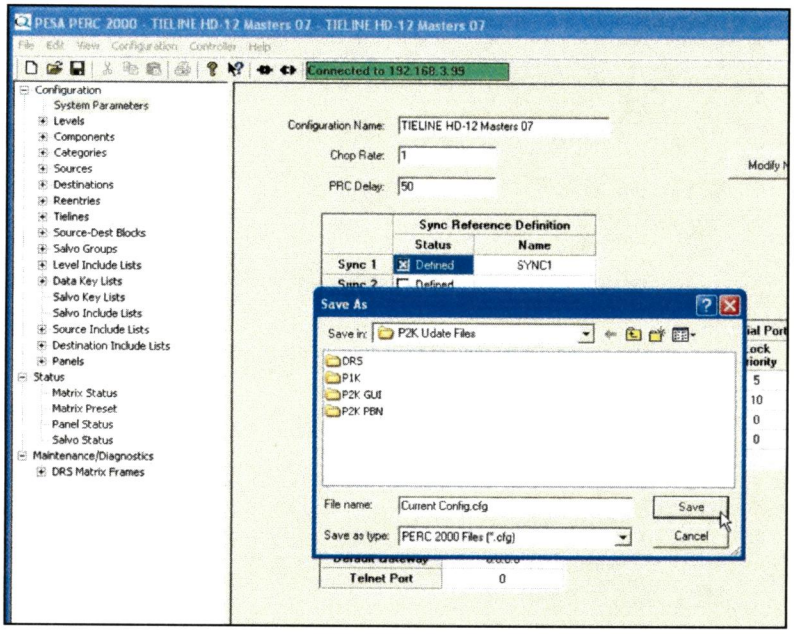

Figure 9. Save As Browse Box

☐ 8. Locate and click on the Matrix Preset command in the left pane of the GUI display, as shown in Figure 10. This action will bring up the Matrix Preset display as shown. Click the **Get Matrix Current** button as shown. Be sure that the screen updates to the current matrix display before continuing.

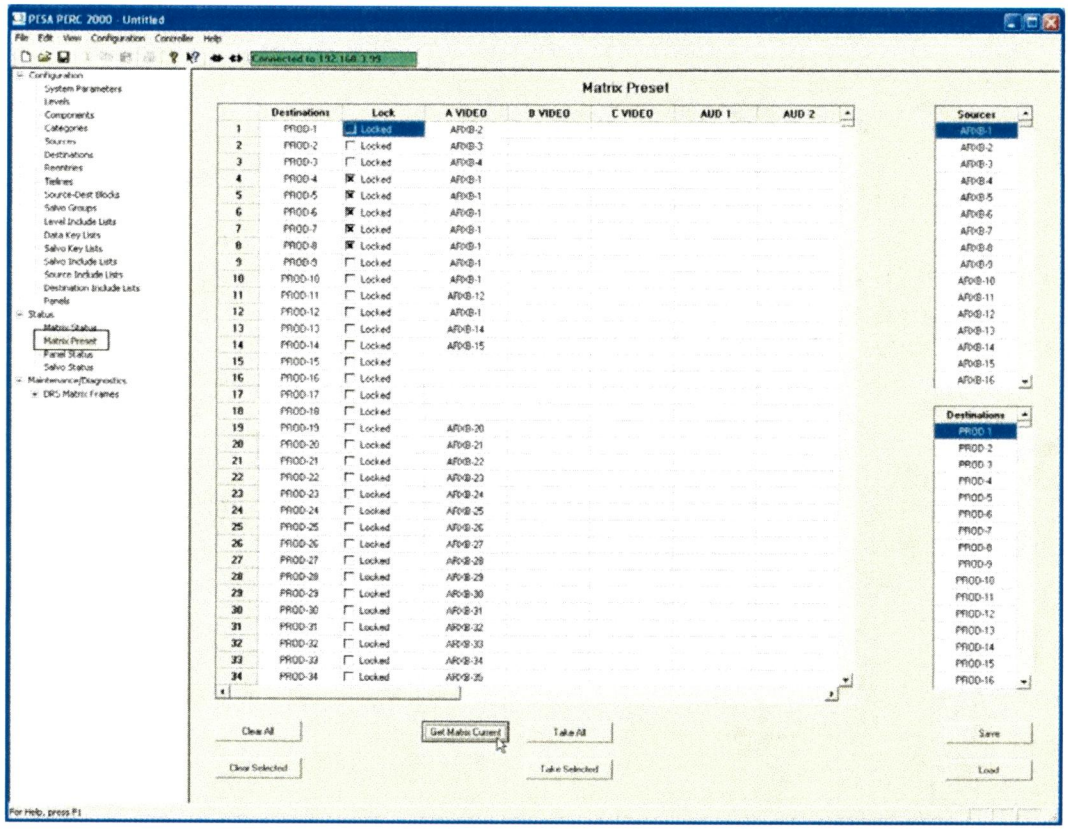

Figure 10. Matrix Preset Screen

☐ 9. Once the window updates with the current matrix status, click the **Save** button as shown in Figure 11.

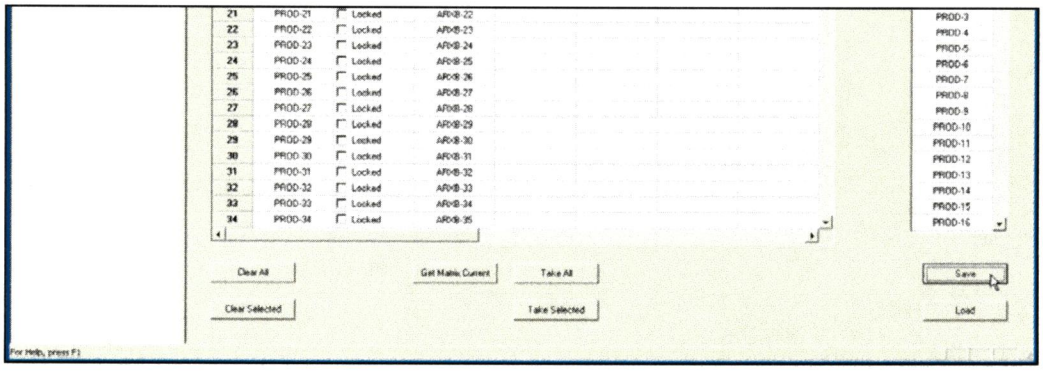

Figure 11. Save Preset Button

☐ 10. The Save As box, Figure 12, is displayed. Select a folder for the file, give the matrix preset file a name and click **Save** to save the file on the host PC.

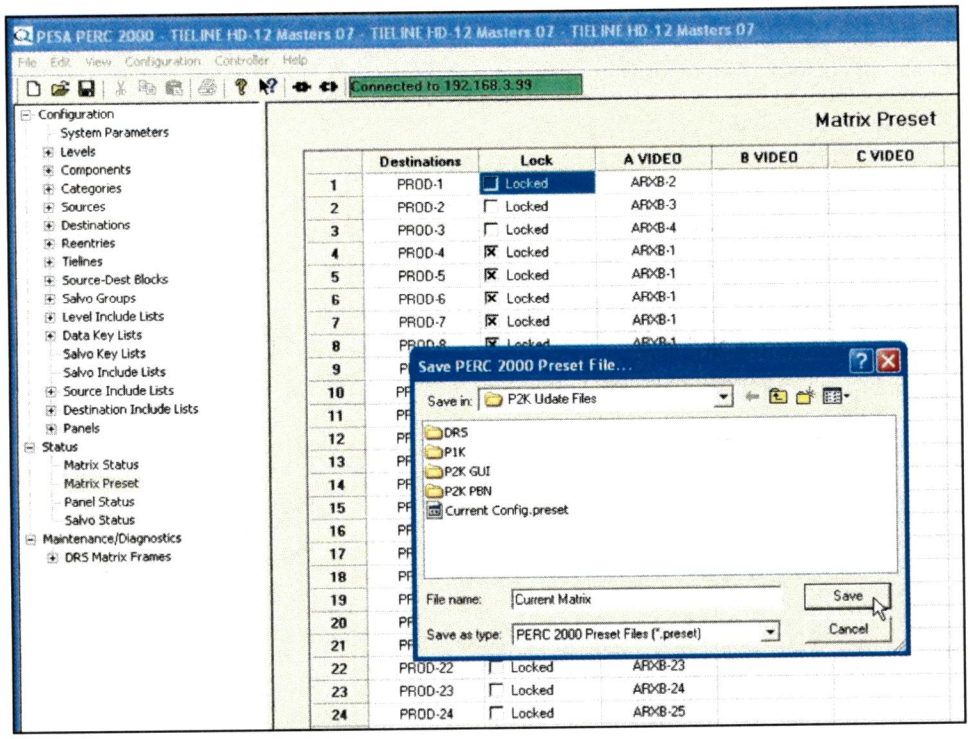

Figure 12. Save File Browse Box

☐ 11. Verify that both the configuration file and the matrix preset file were written in the selected folder. DO NOT proceed without having these two files saved to a folder where they can be easily located for retrieval.

6.0 PERC2000 Update Procedure

Updating and reprogramming the P2K system controller involves multiple steps. Seven firmware modules are loaded into flash memory on the board, per the procedural steps in Paragraph 6.1. Once all seven modules have been loaded, the non-volatile memory of the P2K must be completely cleared per the procedural steps in Paragraph 6.2. It is imperative that you complete the steps of Paragraph 6.1 for all seven modules before proceeding to Paragraph 6.2. Do not take any of the following steps out of the sequence listed here. Severe damage can occur to the controller board.

6.1 P2K Firmware Module Updates

The following steps update the firmware loaded into flash memory on the P2K controller. If you have more than one P2K system controller in your system, follow the steps in this paragraph for each controller board.

You will install seven files into the P2K memory. One of these is the **P2KMainApp_V2_0_10-9-2007.pbn** file. Please note that this file can take from 6 to more than 20 minutes to load!! Wait for the GUI to confirm the update has completed. If you stop the load process prematurely irreparable damage WILL occur to the P2K Controller.

☐ 1. If it is not already running, launch the newly released P2K GUI application by double clicking the PERC2000.exe file contained in the P2K GUI folder you created in Paragraph 4.

☐ 2. Verify the P2K PBN folder you created in Paragraph 4 contains the files shown in Figure 13. All of these files are used in the update procedure.

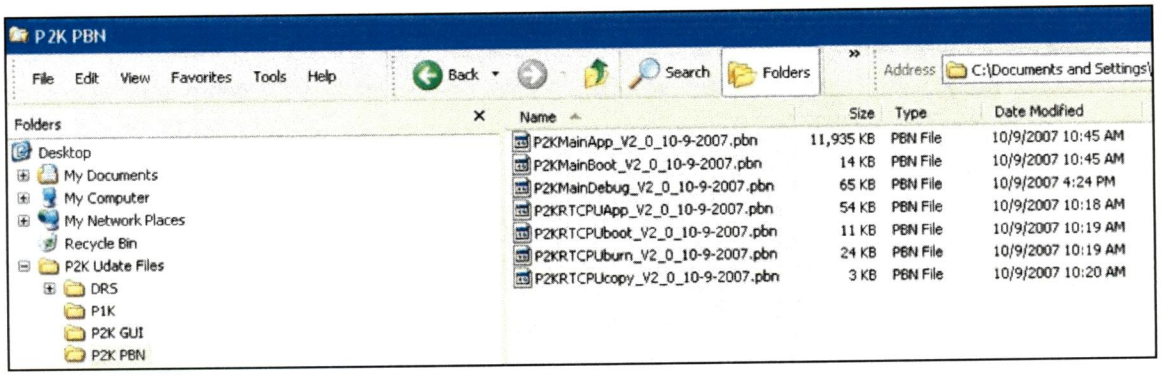

Figure 13. P2K PBN Folder Contents

☐ 3. Click on the Help menu in the Windows™ menu bar and select the "Flash Utility" option from the menu as shown in Figure 14.

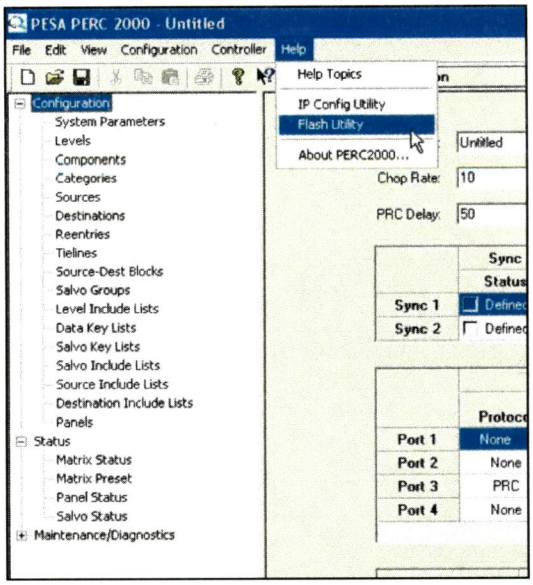

Figure 14. Flash Utility Command Location

☐ 4. This will bring up the Flash Utility window as shown in Figure 15. All devices in the system that are under control of the GUI and assigned an IP address are displayed in the top box of the window. Locate the P2K system controller board by IP address and click on the entry. The entry is highlighted as an indication it is the device chosen for flash update.

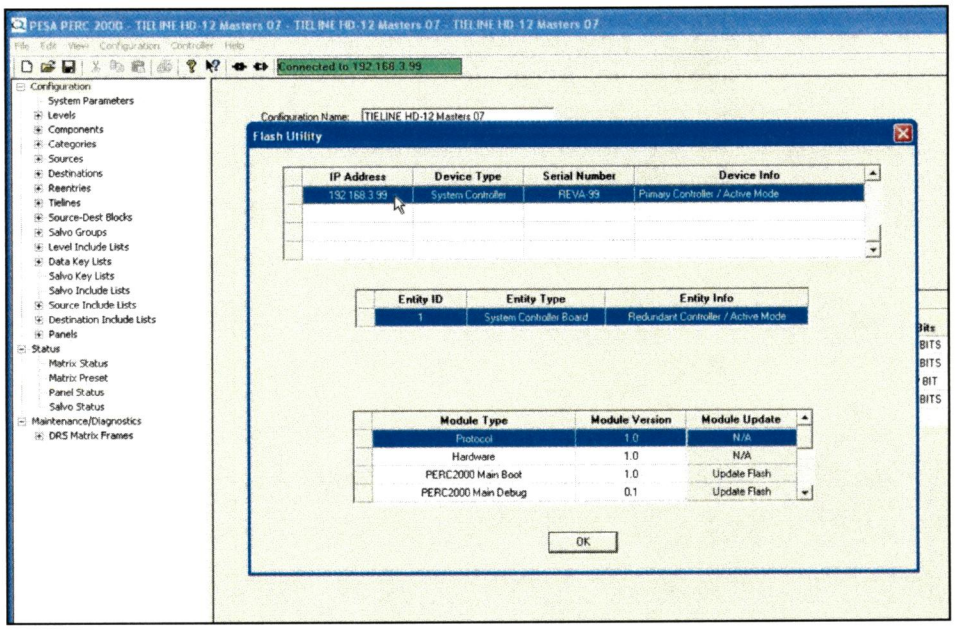

Figure 15. Flash Utility Screen

☐ 5. Entries in the Module Type listing identify the various firmware modules and routines that comprise the controller operating code. We will be updating seven of these elements, but the order of updating is critical and must be followed exactly as presented in the following steps. Use the scroll bar in the Module Type window to locate the module named **PERC2000RT CPU Burn**, as shown in Figure 16, and click on this entry to highlight the module name. Click the cursor in the Module Update box on the command **Update Flash**.

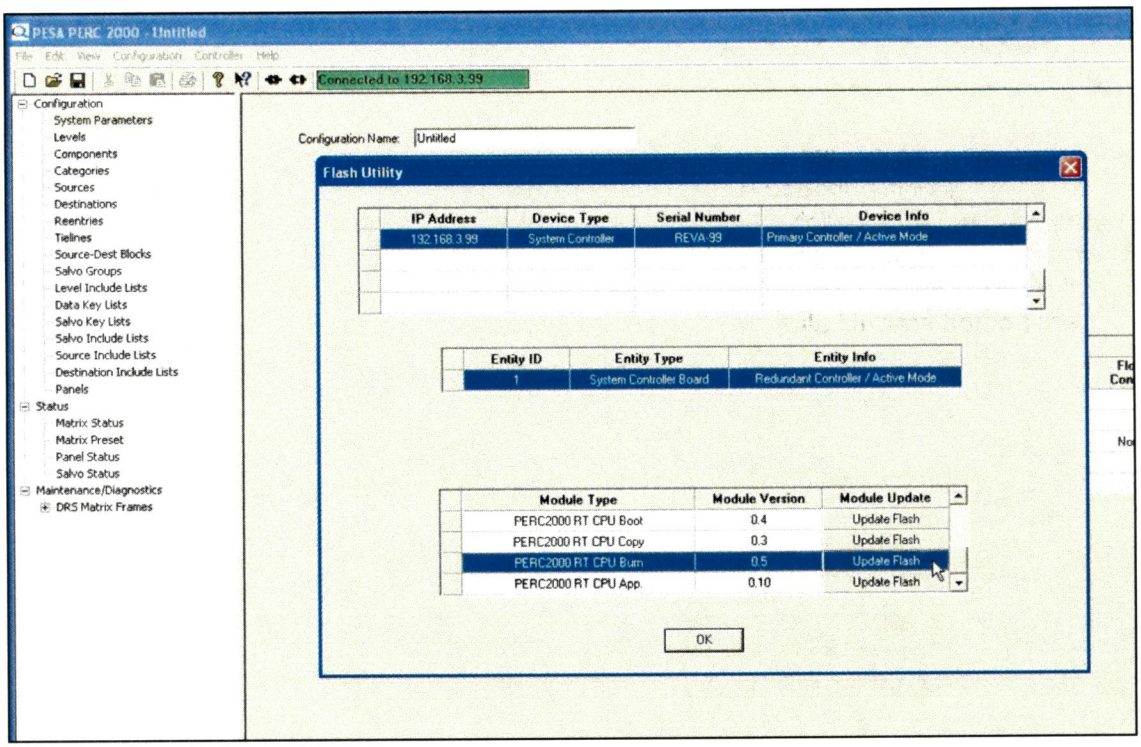

Figure 16. Update Flash Command Location

☐ 6. The Open Flash Update File window is displayed, Figure 17. Browse to the folder named P2K PBN that you created in Paragraph 4. Locate and click on the file named **P2KRTCPUburn_V2_0_10-9-2007.pbn**. The file will appear in the File Name box. Click the **Open** button on the window.

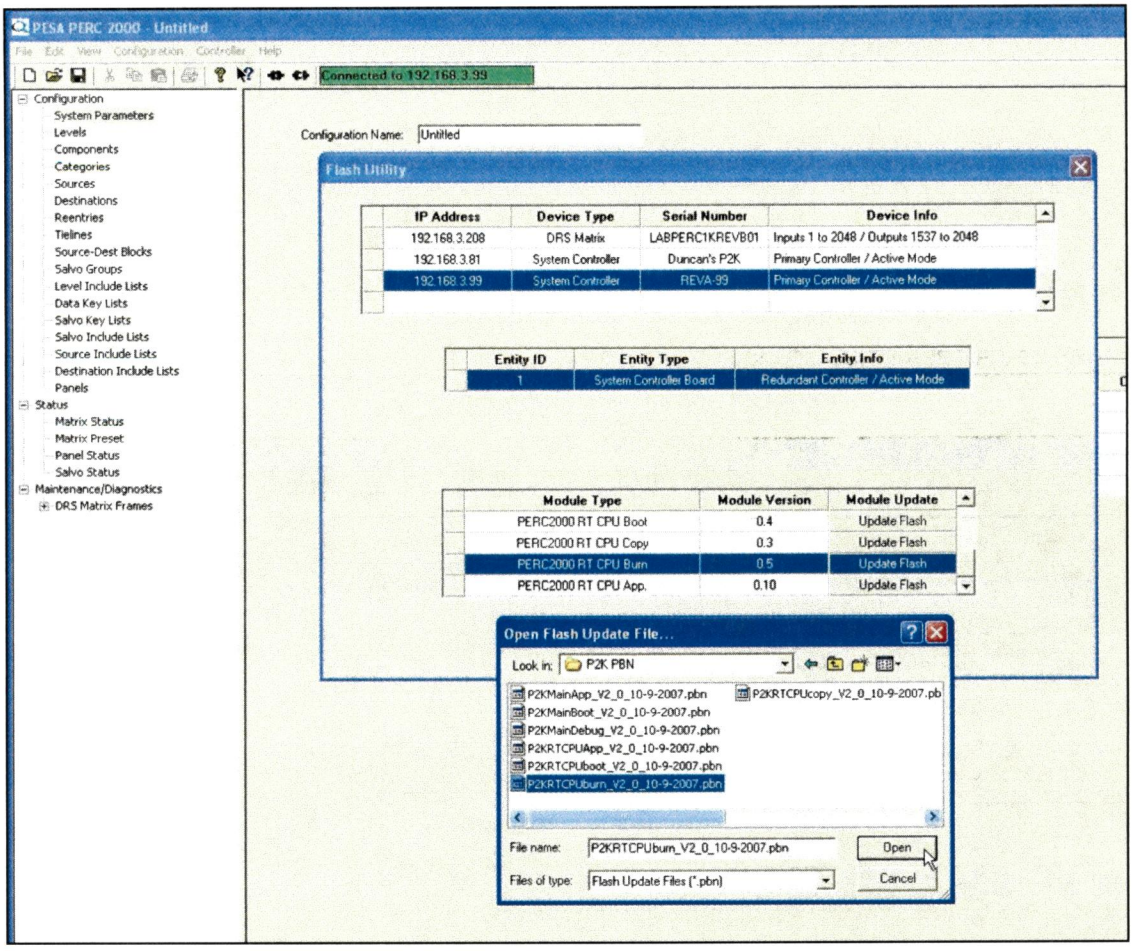

Figure 17. Open Flash Update File Browse Box

☐ 7. The OK to proceed? window, Figure 18, is displayed. Click the **Yes** button to begin the reprogramming operation.

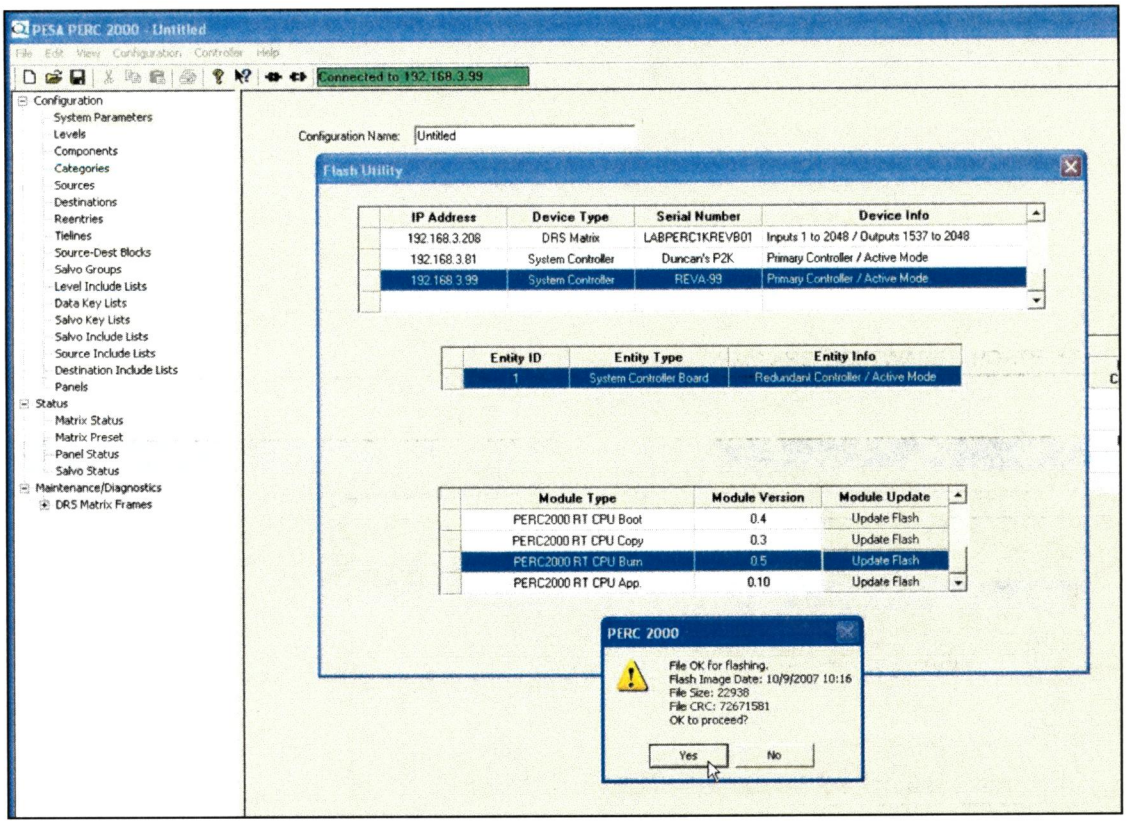

Figure 18. Caution Dialog Box

☐ 8. When the module has been reprogrammed, the GUI will display a window stating that the Flash Update was successful as shown in Figure 19. Click **OK** to clear the window.

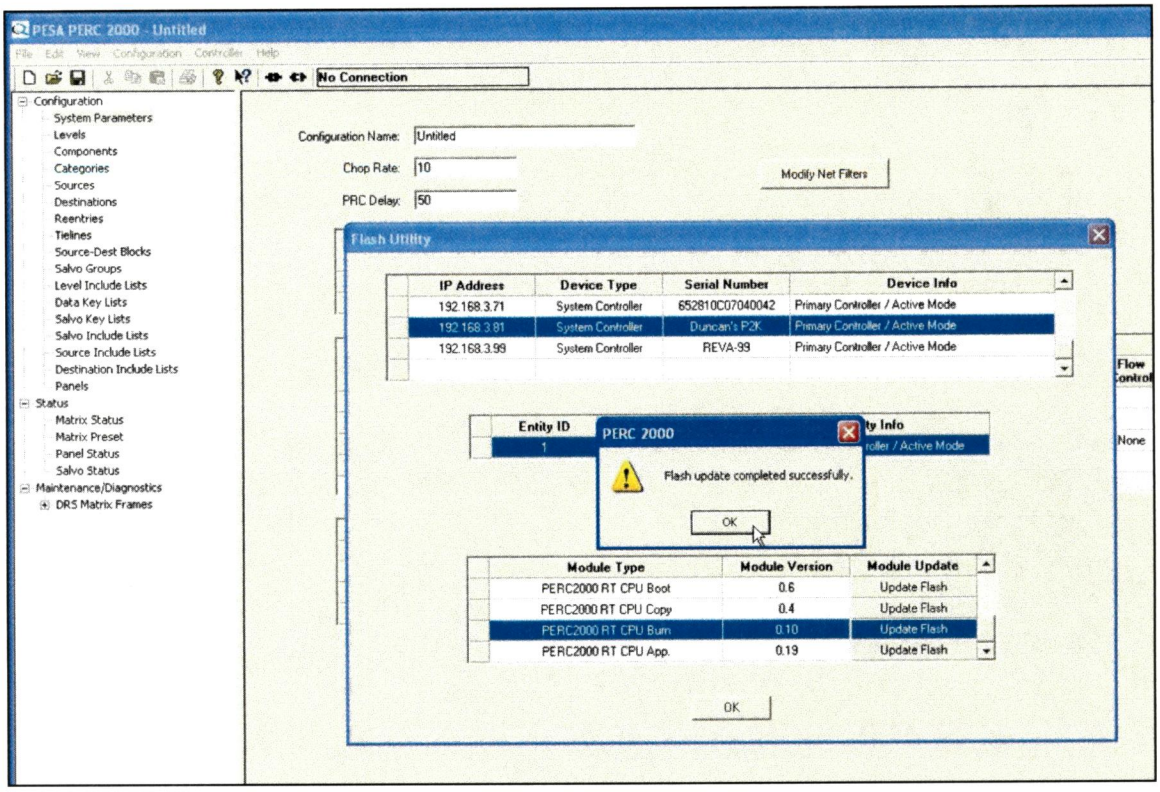

Figure 19. Flash Complete Notification Box

☐ 9. At the completion of each module reprogramming operation, repeat the procedure outlined in steps 5 through 8 for the remaining modules **IN THE ORDER LISTED BELOW**. Locate the Module Type in the scroll list on the Flash Utility screen and use the module file listed in each step from the files located in the P2K PBN folder.

☐ **PERC2000 RT CPU Burn** using the file named **P2KRTCPUburn_V2_0_10-9-2007.pbn** from the P2K PBN folder (This was completed in the steps above).

☐ **PERC2000 RT CPU Boot** using the file named **P2KRTCPUboot_V2_0_10-9-2007.pbn** from the P2K PBN folder.

☐ **PERC2000 RT CPU Copy** using the file named **P2KRTCPUcopy_V2_0_10-9-2007.pbn** from the P2K PBN folder.

☐ **PERC2000 RT CPU App** using the file named **P2KRTCPUApp_V2_0_10-9-2007.pbn** from the P2K PBN folder.

☐ **PERC2000 Main Boot** using the file named **P2KMainBoot_V2_0_10-9-2007.pbn** from the P2K PBN folder.

☐ **PERC2000 Main Debug** using the file named **P2KMainDebug_V2_0_10-9-2007.pbn** from the P2K PBN folder.

☐ **PERC2000 Main App** using the file named **P2KMainApp_V2_0_10-9-2007.pbn** from the P2K PBN folder.

WARNING

The **PERC2000 Main App** module can take from 6 to more than 20 minutes to load!! Wait for the GUI to confirm the update has completed. If you stop the load process prematurely irreparable damage WILL occur to the P2K Controller.

☐ 10. When all seven modules have been installed, exit the GUI application and reboot the P2K controller using the RESET switch on the edge panel of the card or by removing and reapplying power to the card.

☐ 11. Restart the GUI application and select the Flash Utility command under the Help menu. Select the system controller you just reprogrammed, by IP address, from the list. Verify that the version numbers, listed in the Module Version column, reflect the following chart:

Module Type	Module Version	Module Update
Protocol	1.0	N/A
Hardware	1.0	N/A
PERC2000 Main Boot	2.0	Update Flash
PERC2000 Main Debug	2.0	Update Flash
PERC2000 Main App	2.0	Update Flash
PERC2000 Main CPLD	See Note Below	Update Flash
PERC2000 RT CPU Boot	2.0	Update Flash
PERC2000 RT CPU Copy	2.0	Update Flash
PERC2000 RT CPU Burn	2.0	Update Flash
PERC2000 RT CPU App.	2.0	Update Flash

NOTE: The version of the PERC2000 Main CPLD will not change from what it was originally.

☐ If the version numbers are correct, proceed to Paragraph 6.2. If any number does not indicate the updated version number, repeat steps 5 through 8 for that firmware module only. After completion of load, reboot the controller and verify the module version numbers.

6.2 Clear Contents of Non-Volatile Memory

☐ 1. When the firmware update is complete and verified, exit the P2K GUI application.

☐ 2. Remove the P2K controller board being updated from the Cheetah chassis or its stand-alone frame and set it on a static free work surface. It is not necessary to remove power to the frame prior to removing the controller board.

WARNING

DO NOT PERFORM THE NEXT STEPS WITH THE P2K CONTROLLER BOARD INSTALLED IN THE CHASSIS!!!!

☐ 3. Use Figure 20 as a reference and locate jumper header J15. Orient your P2K board in the same position as the illustration. J15 is a six pin header with pin 1 on the right side and pin 6 on the left, as shown. For normal board operation, a shorting jumper connects pins 1&2 and pins 5&6, View A of Figure 20.

☐ 4. Remove the left side shorting jumper from pins 5&6, and install on pins 4&5 as shown in View B of Figure 20.

☐ 5. Leave the shorting jumper in place on pins 4&5 for 20 to 30 seconds, minimum. This step will deplete power from the capacitors providing memory-hold voltage and allow the non-volatile memory to lose its data.

☐ 6. Return the shorting jumper to pins 5&6 of J15.

WARNING

DO NOT RE-INSTALL THE P2K BOARD INTO THE CHASSIS WITH THE JUMPER ON PINS 4&5. THIS WILL CAUSE A DIRECT SHORT ON THE POWER RAIL!!!!

☐ 7. Reinstall the P2K controller in the Cheetah chassis or the stand alone rack mount frame.

☐ 8. If you did remove power to the frame prior to removing the controller, reapply power to the frame at this time.

☐ 9. Verify that you can communicate with the P2K.

☐ 10. If you have more than one P2K system controller in your system, repeat all steps of Paragraph 6.1 and 6.2 for all controller boards you have. Once all controllers have been reprogrammed, proceed to Paragraph 7.0

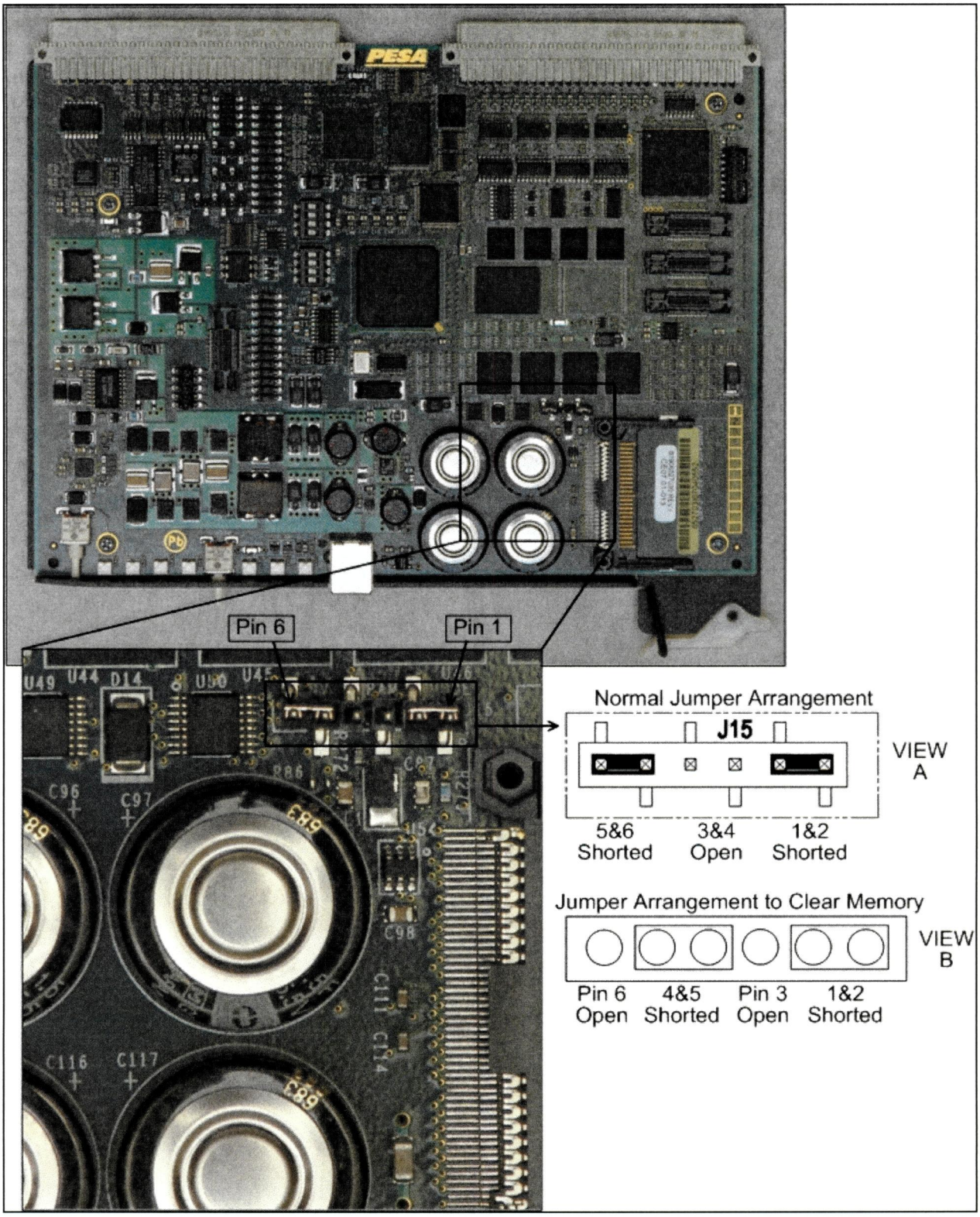

Figure 20. P2K Controller Jumper Location

7.0 PERC1000 Update Procedure

Updating and reprogramming the P1K frame controllers is similar to the process just performed for the P2K system controller. This update procedure also involves multiple steps. Only one firmware module is loaded into flash memory on the board, per the procedural steps in Paragraph 7.1. Once the firmware module load is completed, the base IP address of ALL P1K frame controllers must be set the same using the P2K GUI per the procedural steps in Paragraph 7.2. Do not perform any of the following steps out of the sequence presented here.

7.1 P1K Firmware Module Update

The following steps update the firmware loaded into flash memory on the P1K frame controller. If you have more than one P1K frame controller in your system, follow the steps in this paragraph for each controller board.

☐ 1. Verify the P1K folder you created in Paragraph 4 contains the file shown in Figure 21.

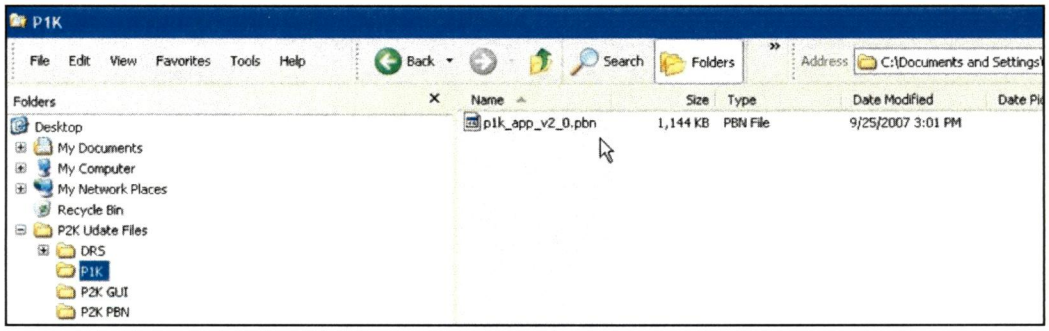

Figure 21. P1K Folder Contents

☐ 2. If it is not already running, launch the newly released P2K GUI application by double clicking the PERC2000.exe file contained in the P2K GUI folder you created in Paragraph 4.

☐ 3. Click on the Help menu in the Windows™ menu bar and select the "Flash Utility" option from the menu as shown in Figure 22.

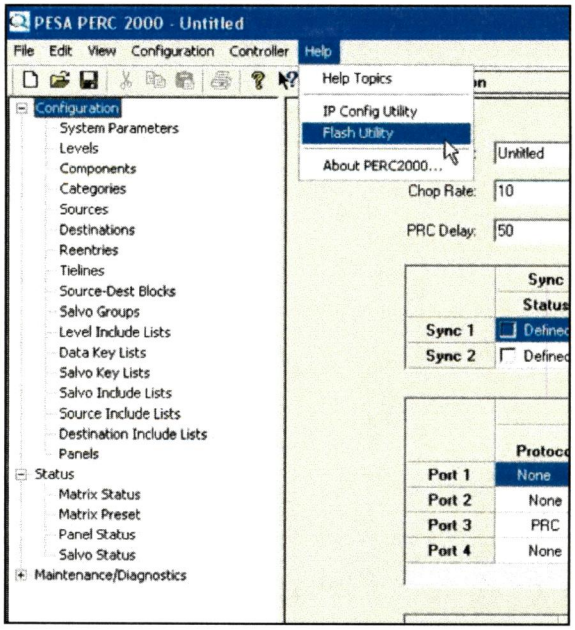

Figure 22. Flash Utility Command Location

☐ 4. This will bring up the Flash Utility window as shown in Figure 23. All devices in the system that are under control of the GUI and assigned an IP address are displayed in the top box of the window. Locate the P1K frame controller you wish to update by IP address, it will be listed as Device Type DRS Matrix, and click on the entry. The entry is highlighted as an indication it is the device chosen for flash update.

☐ 5. The middle pane of the Flash Utility window identifies the entities within the selected DRS matrix, and lists them in the column titled Entity Type. An entity is any of the components making up the matrix such as the DXE Core Board (listed as DRS Core Board) and the audio input and output boards. Clicking on any entry in the Entity ID list selects that entity as the component on which you wish to perform flash memory reprogramming and determines which firmware/software modules are listed in the Module Type pane, as discussed in Paragraph 6. Firmware modules for the P1K controller are contained in the same list as the DXE Core Board. In order to access the P1K firmware module for reprogramming, be sure that the **DRS Core Board** entry in the Entity ID listing is highlighted, as shown in Figure 23.

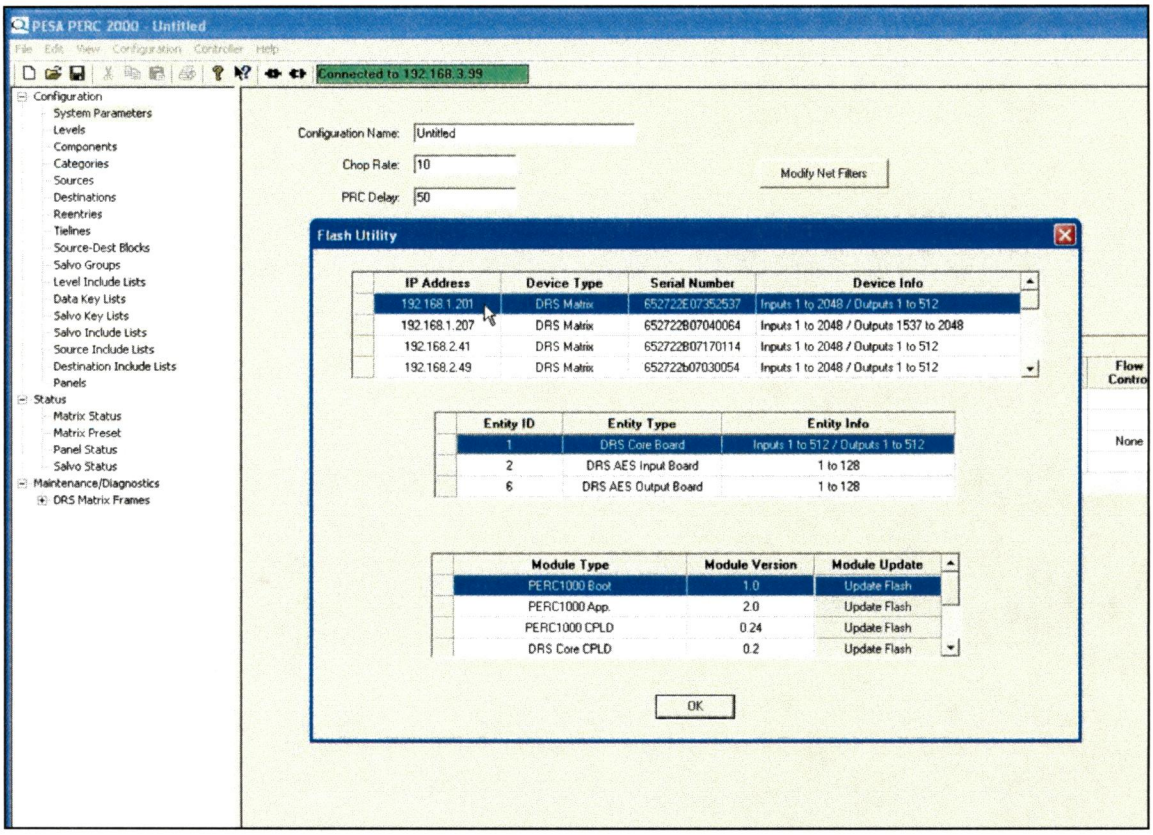

Figure 23. Flash Utility Screen

☐ 6. Entries in the Module Type listing identify the various firmware modules and routines that comprise the controller operating code. Use the scroll bar in the Module Type window to locate the module named **PERC1000 App.**, as shown in Figure 24, and click on this entry to highlight the module name. Click the cursor in the Module Update box on the command **Update Flash.**

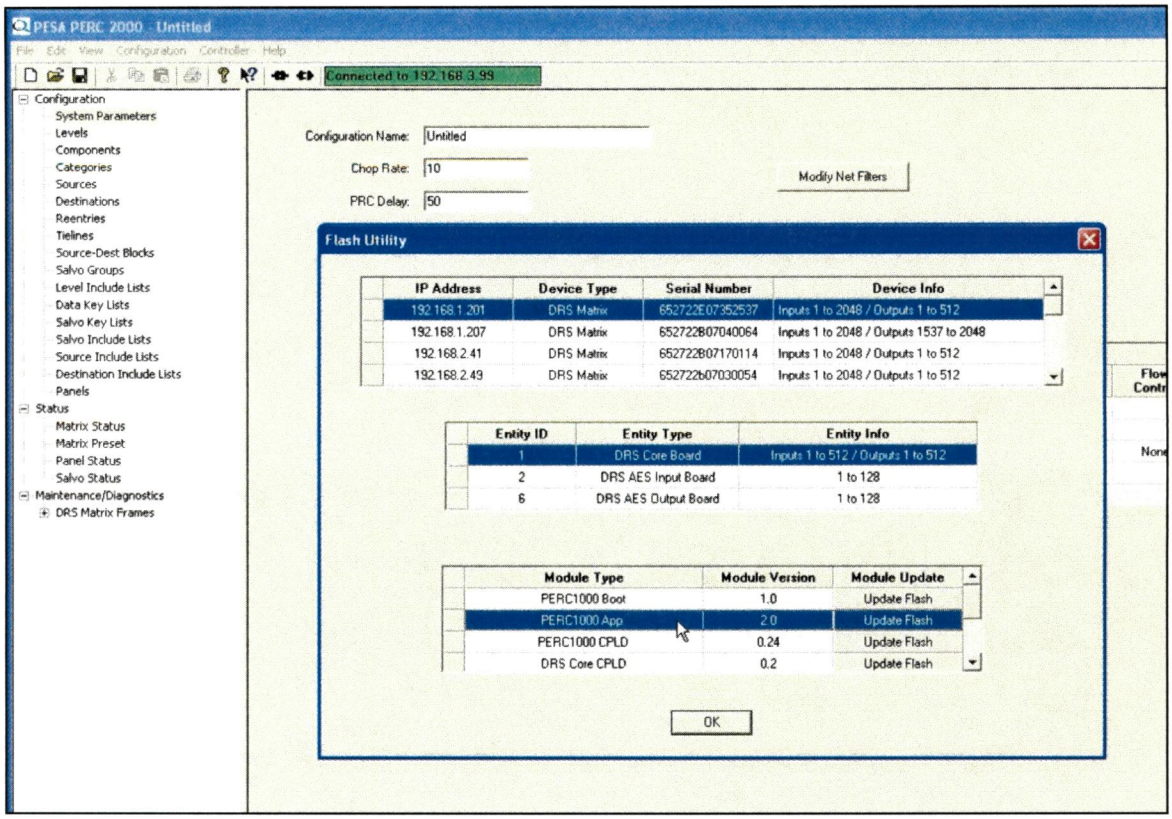

Figure 24. Module Type Listing

☐ 7. The Open Flash Update File window is displayed, Figure 25. Browse to the folder named P1K that you created in Paragraph 4. Locate and click on the file named **p1k_app_v2_0.pbn**. The file will appear in the File Name box. Click the **Open** button on the window.

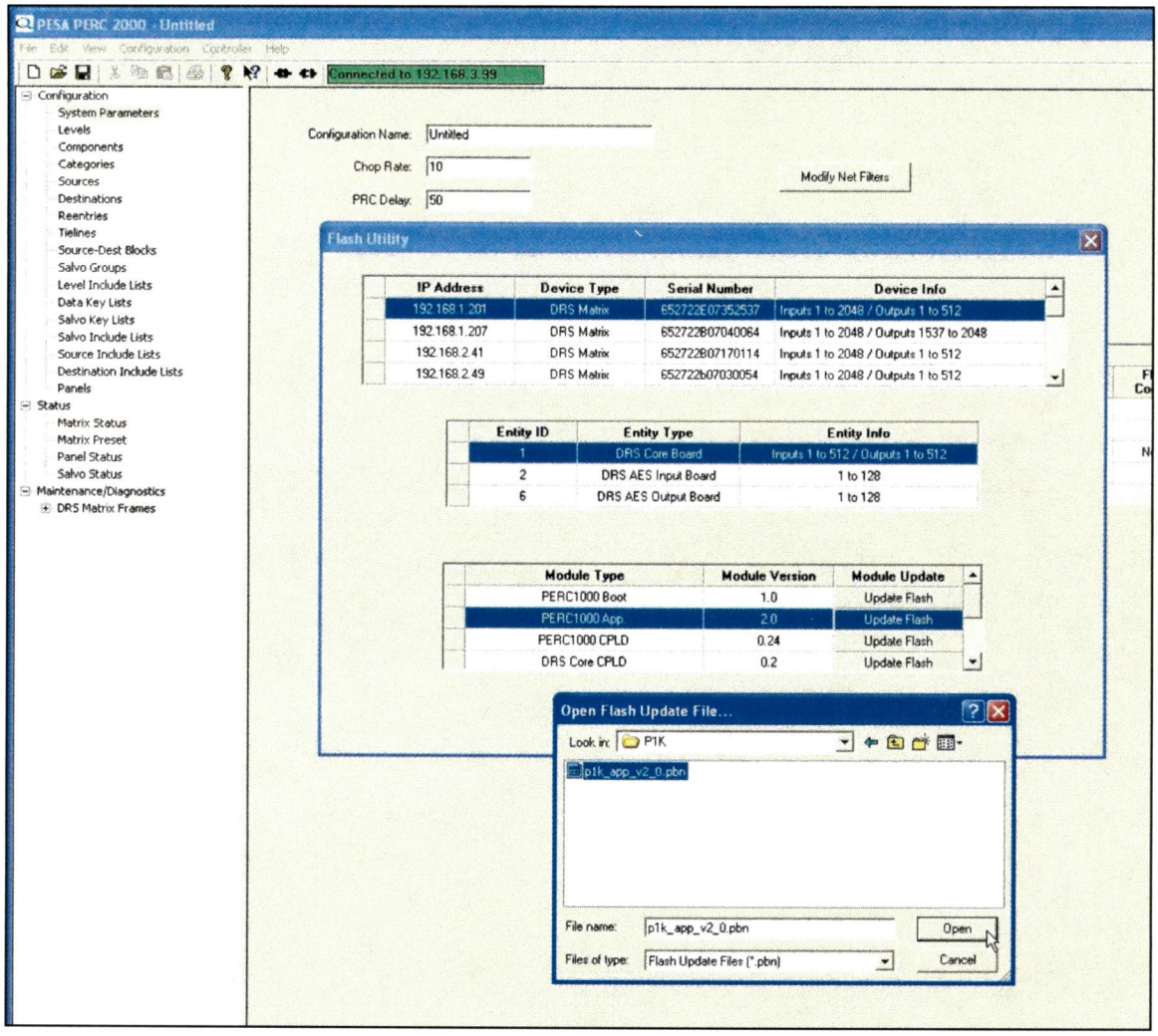

Figure 25. Open Flash Update File Browse Box

☐ 8. The OK to proceed? window, Figure 26, is displayed. Click the **Yes** button to begin the reprogramming operation.

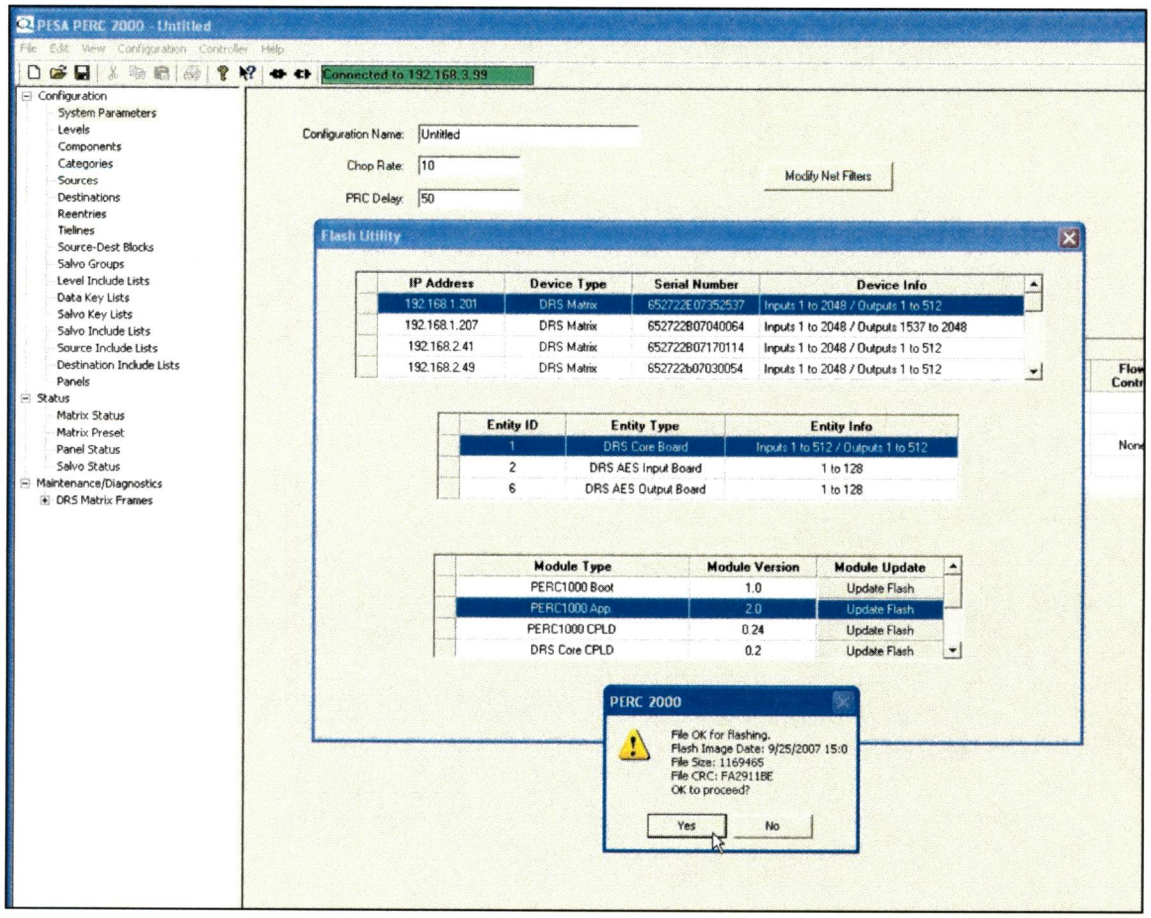

Figure 26. Caution Dialog Box

☐ 9. When the module has been reprogrammed, the GUI displays a window stating that the Flash Update was successful as shown in Figure 27. Click **OK** to clear the window. The P1K controller automatically reboots after completion of the firmware upgrade.

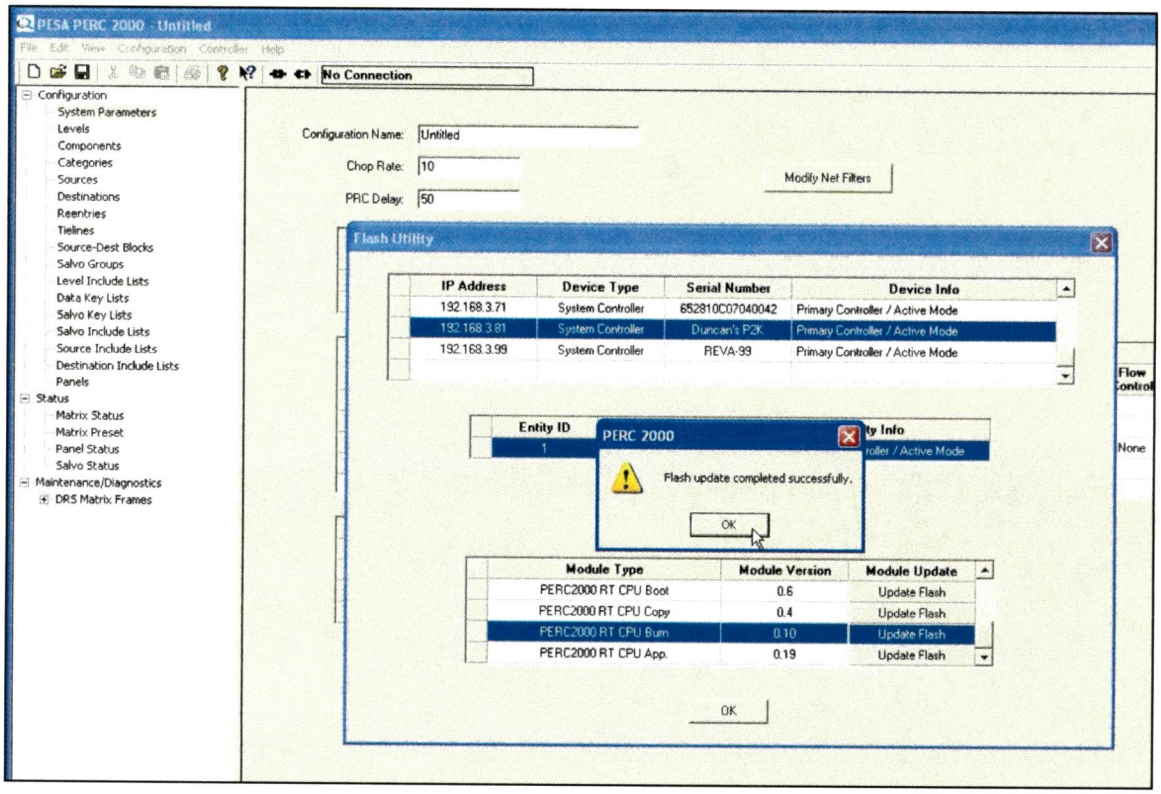

Figure 27. Flash Complete Notification

☐ 10. At the completion of each module reprogramming operation, repeat the procedure outlined in steps 4 through 8 for the remaining P1K frame controllers in the system. It is not necessary to exit the Flash Utility Screen before continuing to the next P1K. Simply select the IP address of the next P1K in the IP Address menu list until all frame controllers have been reprogrammed. Do not proceed to the next step until all frame controllers have been reprogrammed.

☐ 11. Once all P1K controllers have been reprogrammed, use the Flash Utility Screen to verify that the Module Version number of the **PERC1000 App.** Module is 2.0 for each P1K (noted as Device Type DRS Matrix) in the IP Address listing.

☐ If the version numbers are correct, proceed to Paragraph 7.2. If any controller does not indicate the updated version number (2.0), repeat steps 4 through 8 for that P1K controller only. After completion of reload, verify the module version number.

7.2 Reset Base IP Address on All P1K Controllers

One of the functional changes introduced by this firmware update is the ability to set the base IP address of the P1K frame controller through the P2K GUI. It also provides much more latitude in assigning IP address numbers for a particular system installation. Prior to this update, P1K IP addresses were defined as being 192.168.1.2XX, with the last octet assigned by the system controller based on the setting of the rotary switch in a particular DXE frame. It was possible, using a TelNet Session to change the base IP

address of the first three octet values to values other than 192.168.1; however the fourth octet was always assigned by the system controller as beginning with address 201 and followed the assignment pattern as shown in Table 1. If you did change any part of the IP address in the first three octets, substitute the base address you entered for 192.168.1 in the table entries.

DXE Rotary Switch Setting	Primary/Redundant DXE	DXE I/O Range	IP Address Controller in Slot 1	IP Address Controller in Slot 2
0	Primary	1 – 512	192.168.1.201	192.168.1.202
1	Primary	513 – 1024	192.168.1.203	192.168.1.204
2	Primary	1025 – 1536	192.168.1.205	192.168.1.206
3	Primary	1537 - 2048	192.168.1.207	192.168.1.208
4	Redundant	1 – 512	192.168.1.209	192.168.1.210
5	Redundant	513 – 1024	192.168.1.211	192.168.1.212
6	Redundant	1025 – 1536	192.168.1.213	192.168.1.214
7	Redundant	1537 - 2048	192.168.1.215	192.168.1.216

Table 1.

The firmware update you are installing now allows the base IP address of the P1K frame controllers to be set to any value that best suits your network, with a few caveats:

- You may set the first three octets of the IP address to any values needed for your installation.
- You may assign any value to the fourth octet, keeping in mind that the number you assign will be incremented by the system controller when assigning IP addresses to each of the frame controllers in the system.
- When determining the number for the fourth octet you must dedicate a block of 16 numbers with the number you assign being the starting point.

For example, assume you wish to use the IP addresses 192.168.5.101 through 192.168.5.116 for the P1K frame controllers in your system. Using the P2K GUI you would individually set the base address of each P1K in the system to 192.168.5.101. All controllers must be set to the same address. On initial boot-up of the system, the P2K system controller reads the setting of the rotary switch in each DXE frame, and based on that setting dynamically assigns the increment value to each of the P1K frame controllers in each DXE frame.

The following steps guide you through a procedure to enter any base IP address value you wish to your P1K frame controllers. This procedure **MUST** be performed individually on each P1K in the system and the same base IP address must be entered for each controller. When determining the base IP address you wish to use, remember that you must allow for 16 sequential numbers in the fourth octet, beginning with the number you enter as the base address.

☐ 1. Ensure that the newly upgraded P2K system controller is installed and that the Ethernet connection between the P2K and DXE Frame #1 is functional.

☐ 2. Remove the P1K frame controllers from all DXE frames in the system and move them all to a convenient work area physically close to system DXE Frame 1. It is not necessary to remove power from the controller prior to removing it from the frame.

☐ 3. Insert a P1K into the Primary P1K Controller Slot, see Figure 28. Be sure that power is applied to the main power connector. Allow a few seconds for the P1K to boot.

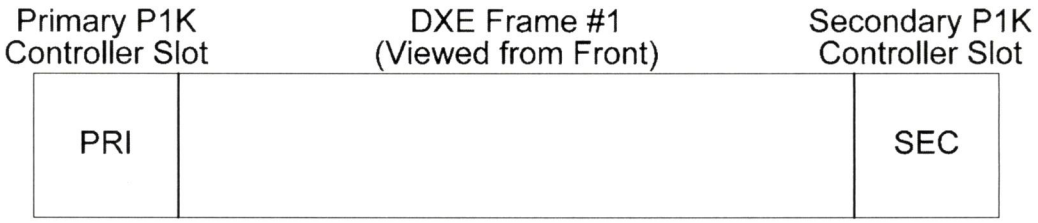

Figure 28. DXE Frame Front Panel Layout

☐ 4. If it is not already running, launch the newly released P2K GUI application by double clicking the PERC2000.exe file contained in the P2K GUI folder you created in Paragraph 4.

☐ 5. Click on the Help menu in the Windows™ menu bar and select the "IP Config Utility" option from the menu as shown in Figure 29.

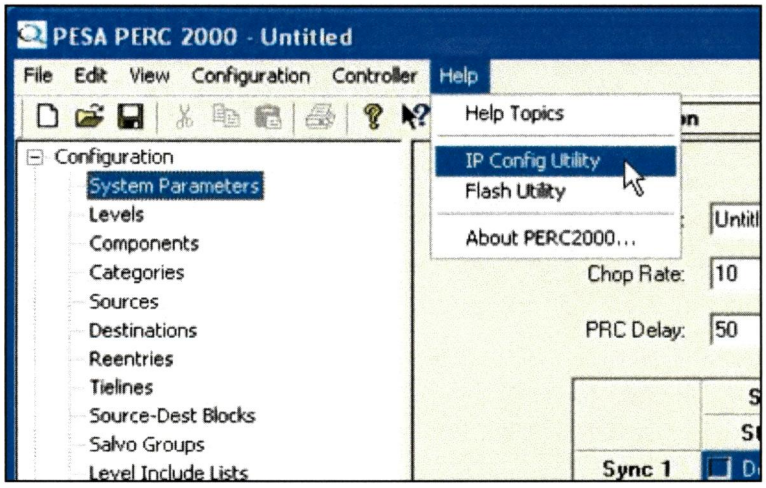

Figure 29. IP Config Utility Command Location

☐ 6. This will bring up the Select Device window as shown in Figure 30. There should only be one device listed and that is the P1K you just loaded into the PRI slot of DXE frame 1. The device is listed by IP address number and it may be different than what is shown

in the example figure. If the entry is not already highlighted, click on it. With the entry highlighted, click the **OK** button to continue.

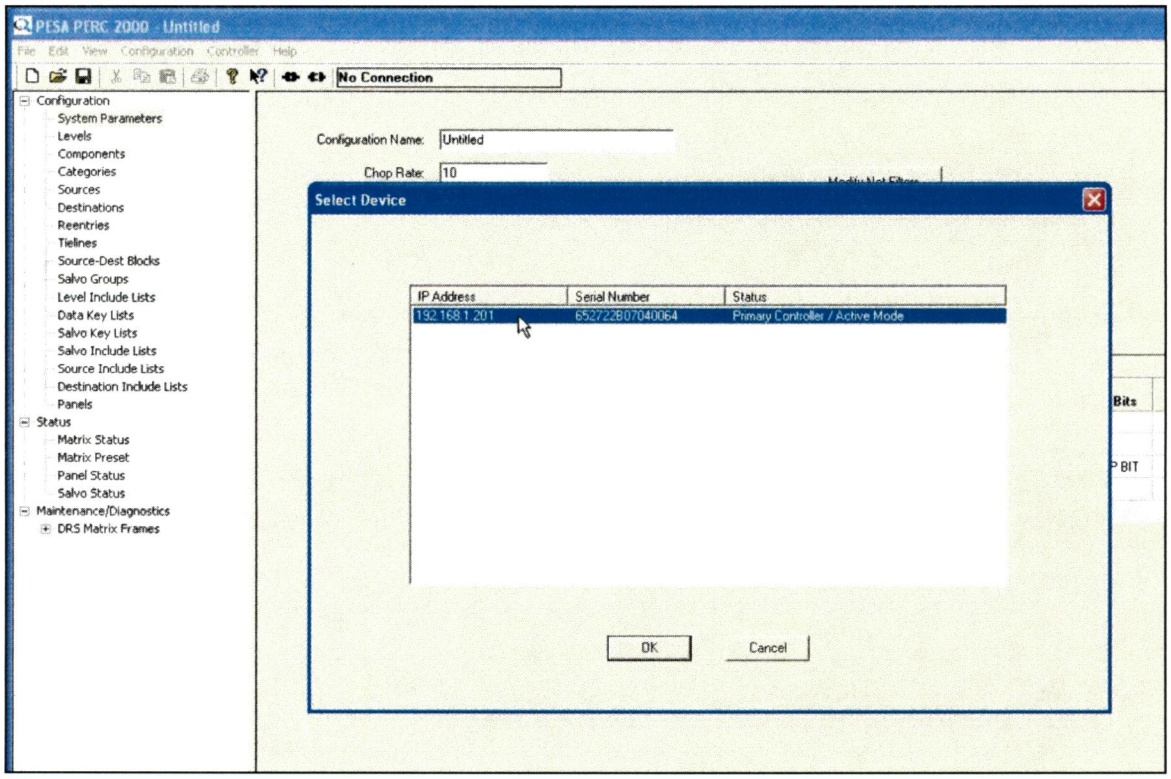

Figure 30. Select Device Window

☐ 7. The Select Device box will clear and the IP Parameters Config box, Figure 31, is displayed. Note when the box initially appears, the IP address listed is the current address of the controller. Click in the IP Address block and remove the currently listed IP address. Enter the "new" IP address you have selected as the base IP address for the P1K controllers. If, based on your network requirements, you also need to assign a "new" Netmask or Default Gateway setting, enter the desired values in the Netmask and Default Gateway boxes. Default values for these settings are as shown in Figure 31:

- Netmask: 255.255.255.0
- Gateway: 0.0.0.0

The box "DHCP Active" should not be checked. In our example screen the "new" IP address is chosen as 192.168.3.101, netmask as 255.255.0.0 and gateway as the default value of 0.0.0.0. Click **Save Changes** to write the new address data to the P1K.

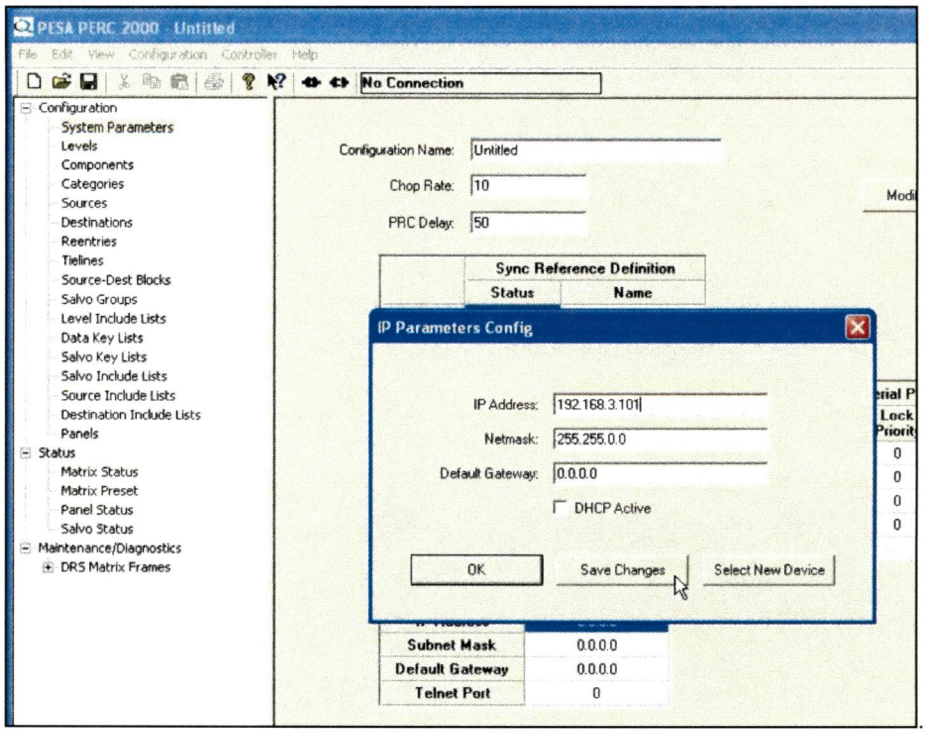

Figure 31. IP Address Data Entry Box

☐ 8. Verify the new IP address loaded by clicking on the IP Config command and check the IP address listed in the Select Device listing. It should reflect the "new" address. If the newly assigned address is not shown in the listing, repeat steps 5 through 7 and check the address again. Do not proceed to the next step until the P1K verifies the new address load.

☐ 9. Leave the P1K reprogrammed in the previous steps in the PRI slot and install any one of the remaining modules in the Secondary (SEC) Controller slot of DXE Frame 1. Be sure that power is applied to the main power connector for the SEC slot. Allow a few seconds for the second P1K to boot.

☐ 10. Click on the Help menu in the Windows™ menu bar and select the "IP Config Utility" option from the menu as shown in Figure 29.

☐ 11. Just as before, this will bring up the Select Device window. However, you will now notice that both P1K controllers are listed in the Select Device listing as shown in Figure 32. The controller in the PRI slot is listed by its newly programmed IP address: in our example 192.168.3.101. The second controller you just installed in the SEC slot will be listed with an IP address of the newly programmed address of the controller in the PRI slot, incremented by a value of one. In our example note that the second controller is listed as IP address 192.168.3.102. It is important that you realize that this address is not yet actually programmed into flash memory of the second controller. Do not make the mistake of thinking the address is already changed and bypass any steps of the procedure.

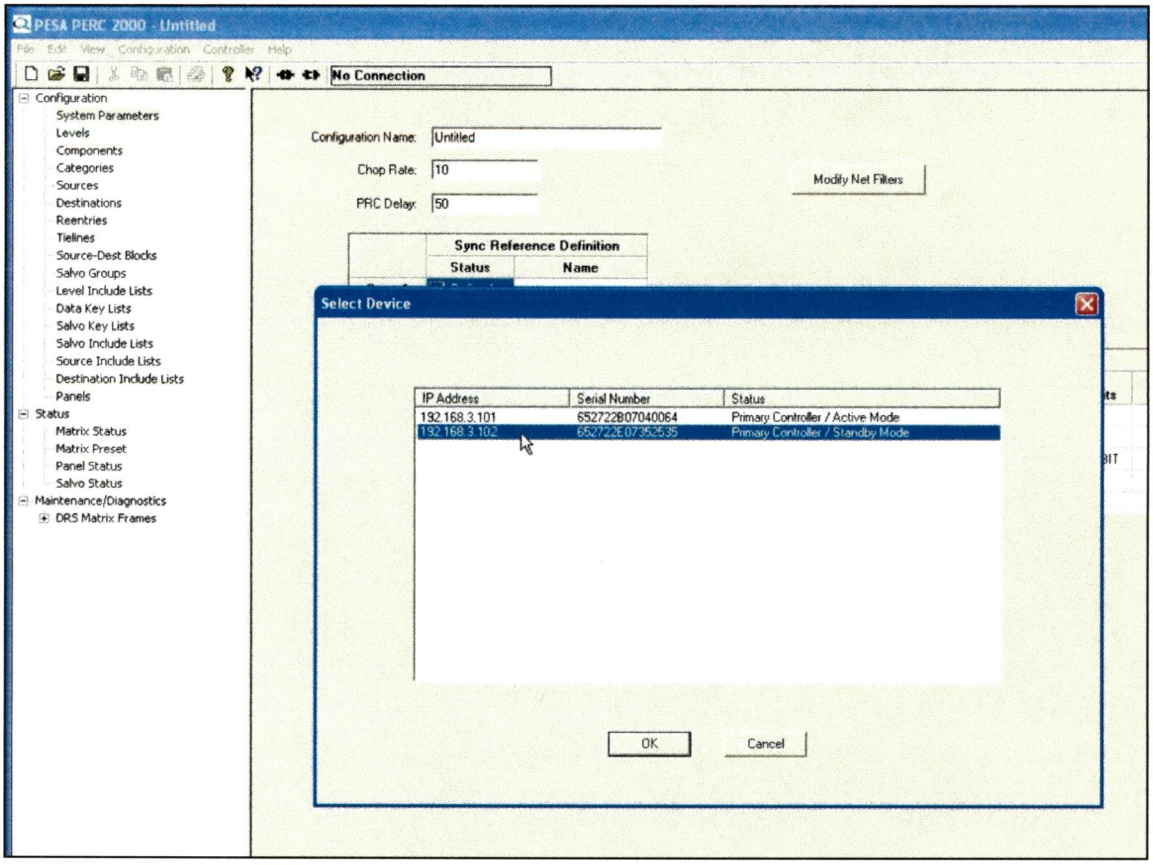

Figure 32. Select Device Window

☐ 12. Move the cursor to the IP address corresponding to the controller loaded into the SEC slot. In our example you would move the cursor to the device listed as 192.168.3.102, as shown in Figure 32. Click on the entry to select it as indicated by the selection being highlighted. Once the device listing for the SEC controller slot is highlighted, click the **OK** button to continue.

☐ 13. The Select Device box will clear and the IP Parameters Config box is displayed. Note when the box initially appears, the IP address listed is displayed as the current address of the controller, as shown in Figure 33. Click in the IP Address block and remove the currently listed IP address. Enter the EXACT SAME IP address you selected as the base IP address for the P1K controllers and programmed into the first P1K you changed in step 7. For our example you would enter 192.168.3.101 as shown in Figure 34. Click **Save Changes** to write the new address data to the P1K in the SEC slot. The new data will be written and the P1K will automatically reboot.

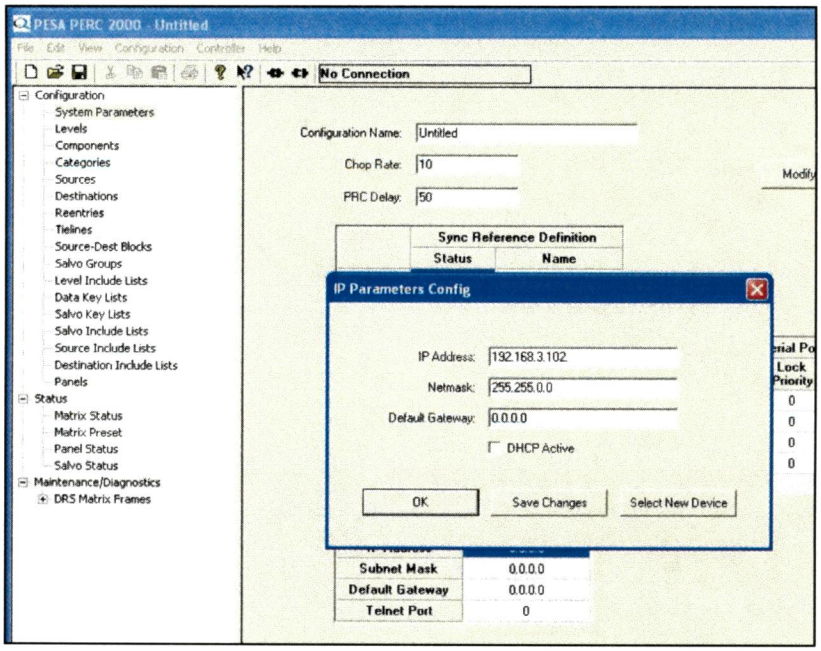

Figure 33. IP Address Data Entry Box

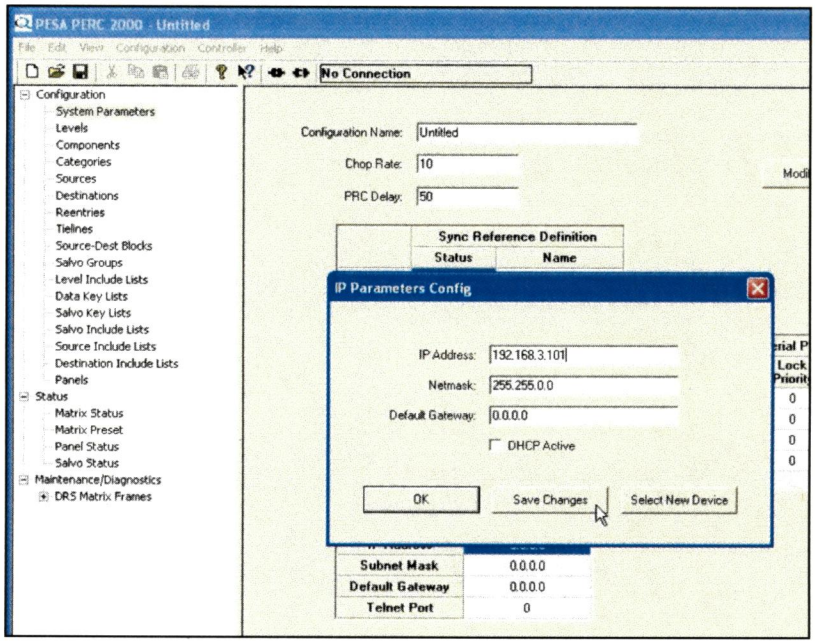

Figure 34. Entering IP Address Data

☐ 14. Verify the new IP address loaded by clicking on the IP Config command and check the IP addresses listed in the Select Device listing. You should see your selected base address displayed for the controller in the PRI slot and the base address incremented by one for the controller in the SEC slot. Close the Select Device listing and remove the newly reprogrammed controller from the SEC slot and set it aside. Leave the controller in the PRI slot in place.

☐ 15. Repeat steps 9 through 14 for ALL remaining P1K controllers before proceeding to the next step. When you have completed this portion of the upgrade procedure ALL P1K controllers should be loaded with the base address you selected; in our example that would be 192.168.3.101.

☐ 16. Reinstall all the P1K controllers into the DXE frames. It is not necessary to remove power to the frame prior to reinstalling the controllers and the order you replace them is not critical. Do remember, however, that the first controller you install in any frame will become the active controller for that frame. So if you would like to have the primary controllers as the active controllers, install the first P1K in the left-hand (PRI) slot of each frame.

☐ 17. Once all P1K controllers have been replaced, allow a few seconds for all to reboot. Click on the IP Config command and verify that the IP addresses listed start with the assigned base address and increment the number in the fourth octet as shown in Table 2.

DXE Rotary Switch Setting	Primary/Redundant DXE	DXE I/O Range	IP Address Controller in Slot 1	IP Address Controller in Slot 2
0	Primary	1 – 512	Base IP Address	Base IP Address + 1
1	Primary	513 – 1024	Base IP Address + 2	Base IP Address + 3
2	Primary	1025 – 1536	Base IP Address + 4	Base IP Address + 5
3	Primary	1537 - 2048	Base IP Address + 6	Base IP Address + 7
4	Redundant	1 – 512	Base IP Address + 8	Base IP Address + 9
5	Redundant	513 – 1024	Base IP Address + 10	Base IP Address + 11
6	Redundant	1025 – 1536	Base IP Address + 12	Base IP Address + 13
7	Redundant	1537 - 2048	Base IP Address + 14	Base IP Address + 15

Table 2.

☐ 18. Close the Device Select window and continue to Paragraph 8.0.

8.0 DRS DXE and Audio Board Update Procedure

The following steps update the firmware loaded into flash memory on the DXE Core board and the audio I/O boards connected to the DXE. Collectively, a DXE frame and the audio frames attached to it are referred to as a DRS Matrix. Each DRS Matrix is identified by the IP address of the P1K frame controllers. If you have more than one DXE frame in your system, follow the steps in this paragraph for each DXE and the audio boards attached to it.

☐ 1. Verify the DRS folder you created in Paragraph 4 contains the sub-folder and files shown in Figure 35.

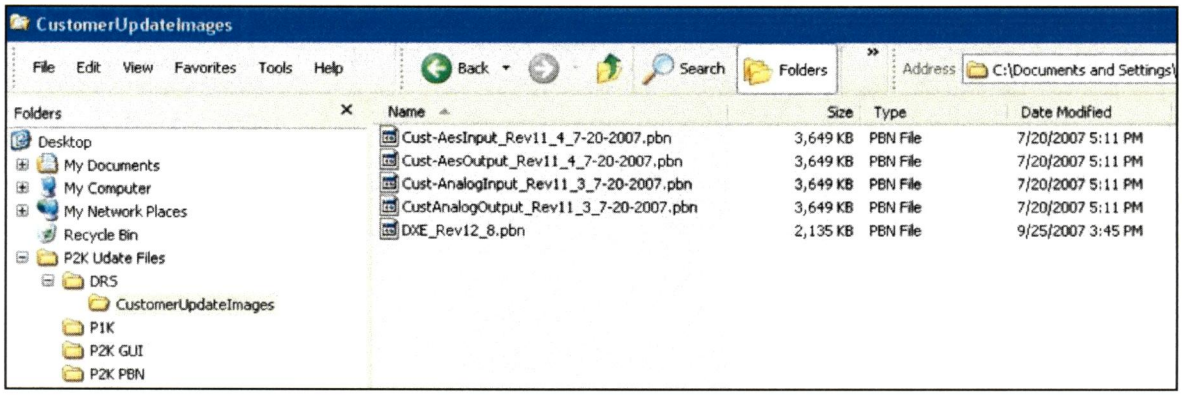

Figure 35. DRS Folder Contents

☐ 2. If it is not already running, launch the newly released P2K GUI application by double clicking the PERC2000.exe file contained in the P2K GUI folder you created in Paragraph 4.

☐ 3. Click on the Help menu in the Windows™ menu bar and select the "Flash Utility" option from the menu as shown in Figure 36.

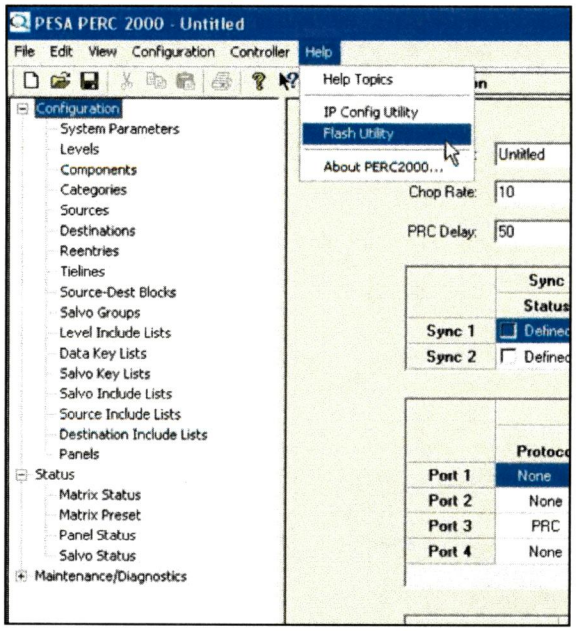

Figure 36. Flash Utility Command Location

☐ 4. This brings up the Flash Utility window as shown in Figure 37. All devices in the system that are under control of the GUI and assigned an IP address are displayed in the top box of the window. Locate the DRS Matrix you wish to update by the IP address of the **ACTIVE** frame controller in the DXE, it will be listed in the Device Type column as DRS Matrix, and click on the entry. Do not use the IP address of the standby frame controller for this procedure. The entry is highlighted as an indication it is the matrix chosen for flash update.

CAUTION

If the IP address you wish to select is highlighted when the Flash Utility window is first open, you **MUST** click off of that entry to any other entry in the list and then click back on the desired IP address entry. If you do not click off and back on the entry, the proper Entity ID and Module Type data for this procedure will not be displayed.

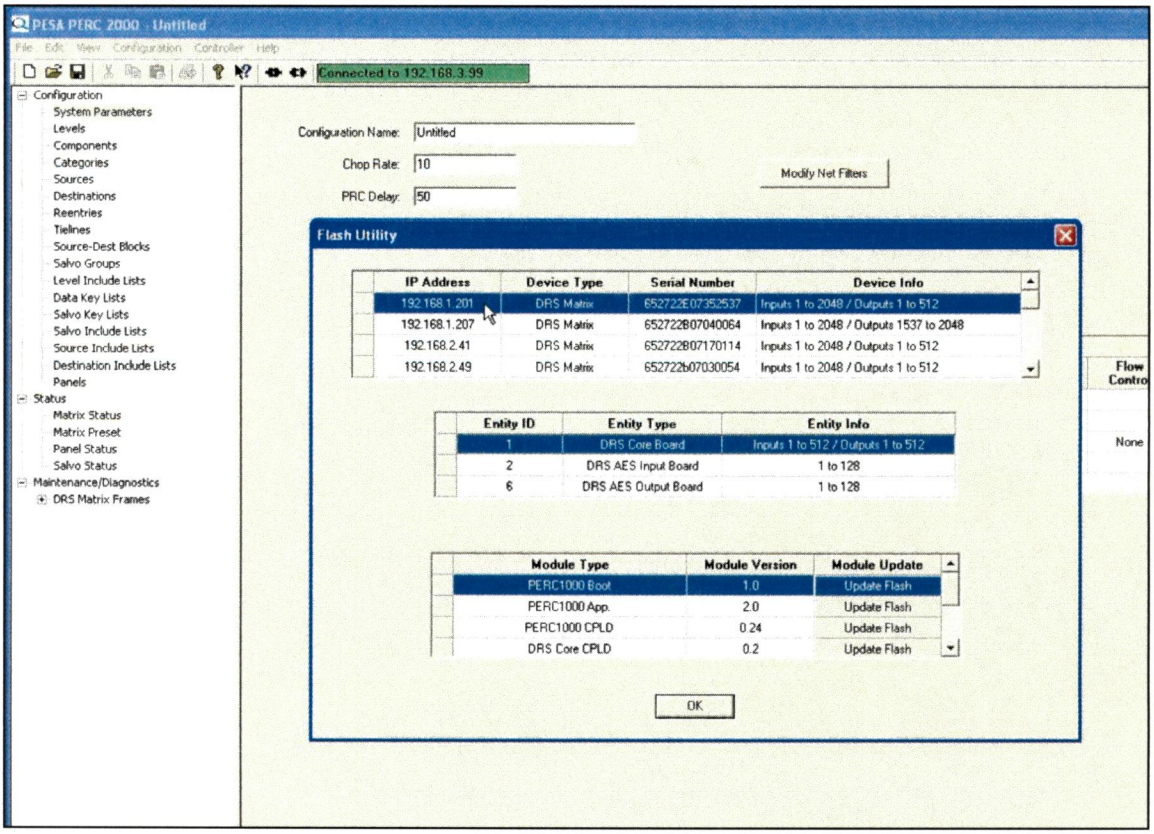

Figure 37. Device Selection Window

☐ 5. The middle pane of the Flash Utility window identifies the entities within the selected DRS matrix, and lists them in the column titled Entity Type. An entity is any of the components making up the matrix such as the DXE Core Board (listed as DRS Core Board) and the audio input and output boards. Clicking on any entry in the Entity ID list selects that entity as the component on which you wish to perform flash memory reprogramming. For this procedure you will reprogram the flash on the DXE Core board first, followed by the audio boards. Highlight the **DRS Core Board** entry in the Entity ID listing as shown in Figure 38.

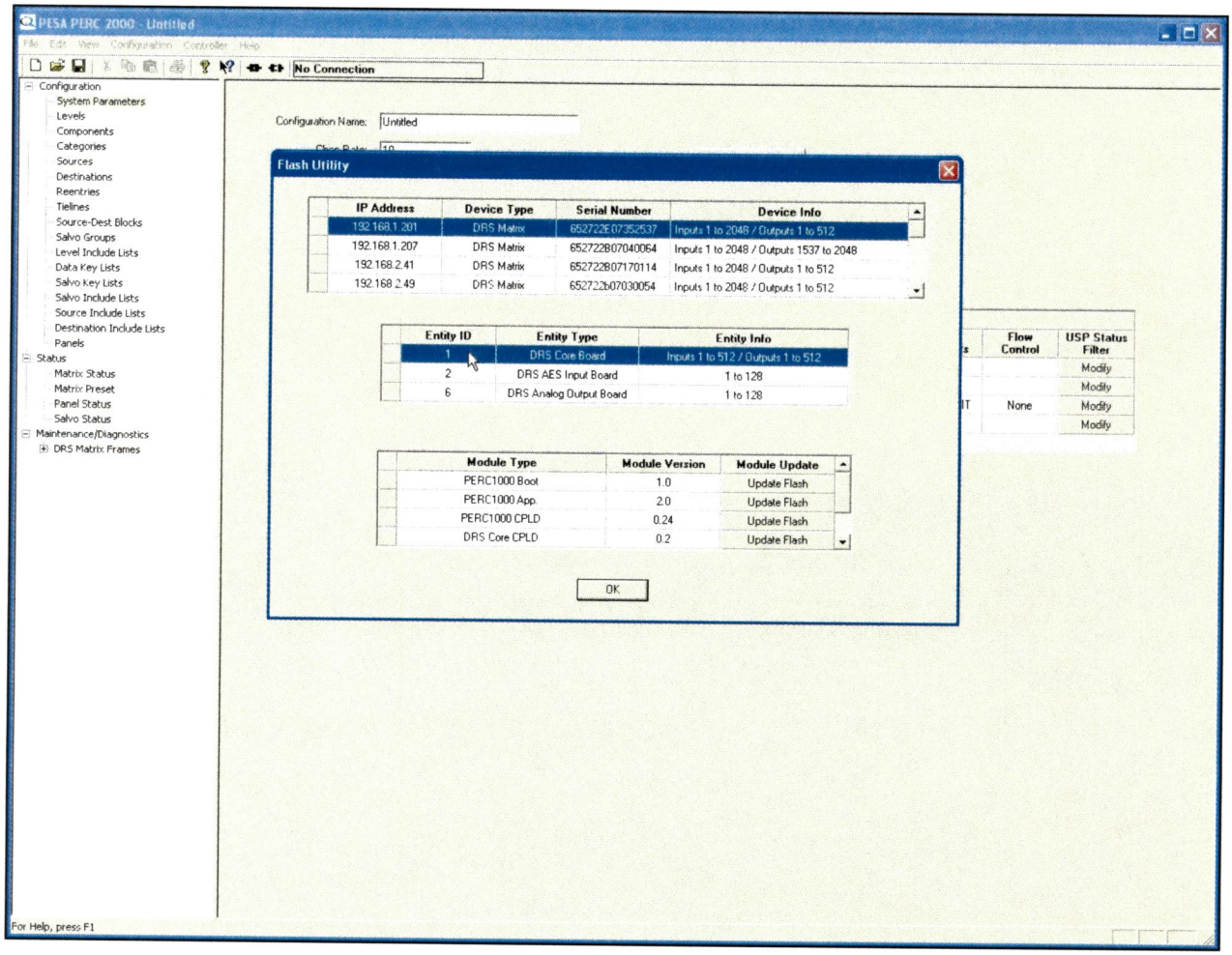

Figure 38. Entity ID Listing

☐ 6. Entries in the Module Type listing identify the various firmware modules and routines associated with the entity selected in the Entity ID pane. Use the scroll bar in the Module Type window to locate the module named **DRS Core V4**, as shown in Figure 39, and click on this entry to highlight the module name. Click the cursor in the Module Update box on the command "Update Flash."

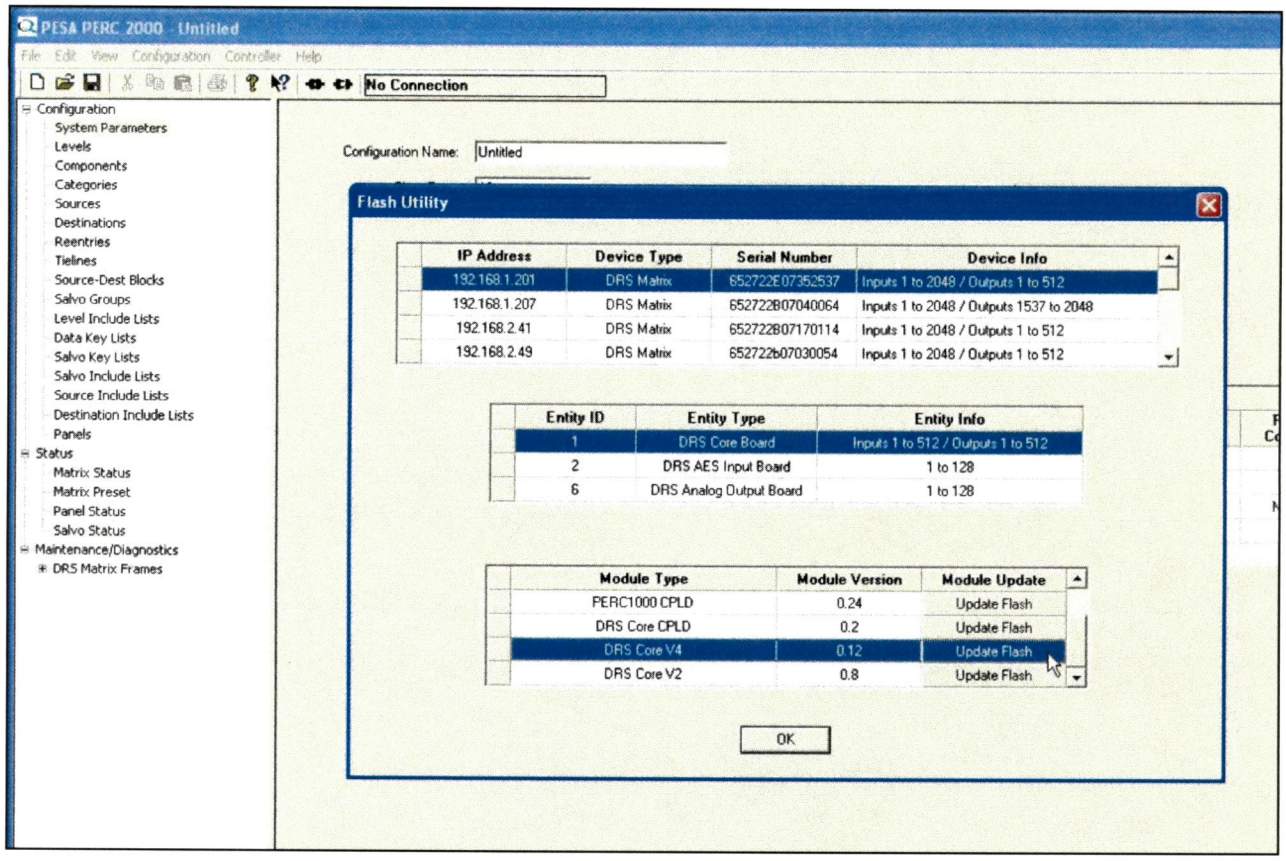

Figure 39. Module Type Listing

☐ 7. The Open Flash Update File window is displayed, Figure 40. Browse to the folder named DRS that you created in Paragraph 4 and open the folder named "CustomerUpdateImages." Locate and click on the file named **DXE_Rev12_8.pbn**. The file appears in the File Name box. Click the **Open** button on the window.

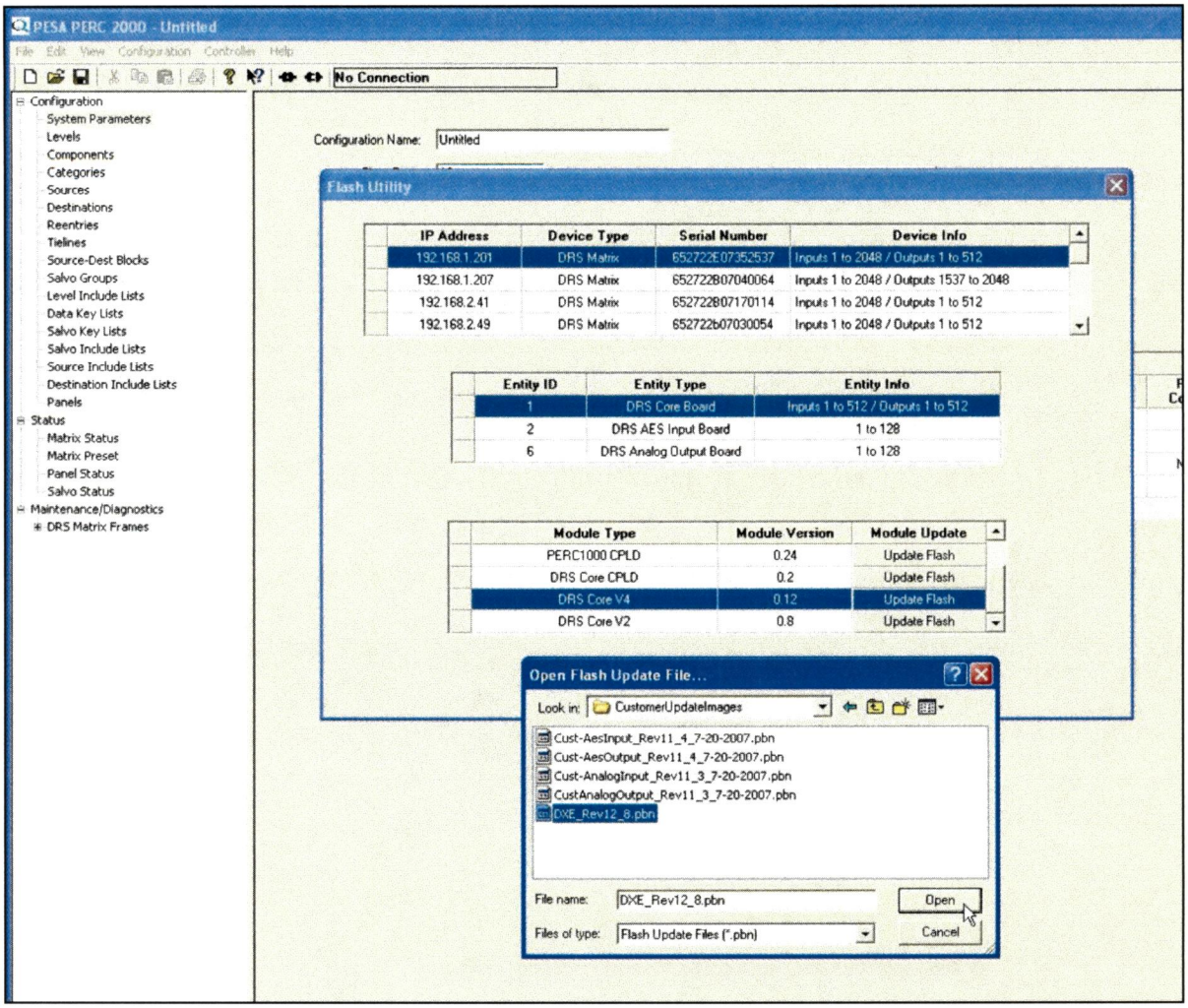

Figure 40. Open Flash Update File Browse Box

☐ 8. The OK to proceed? window, Figure 41, is displayed. Click the **Yes** button to begin the reprogramming operation.

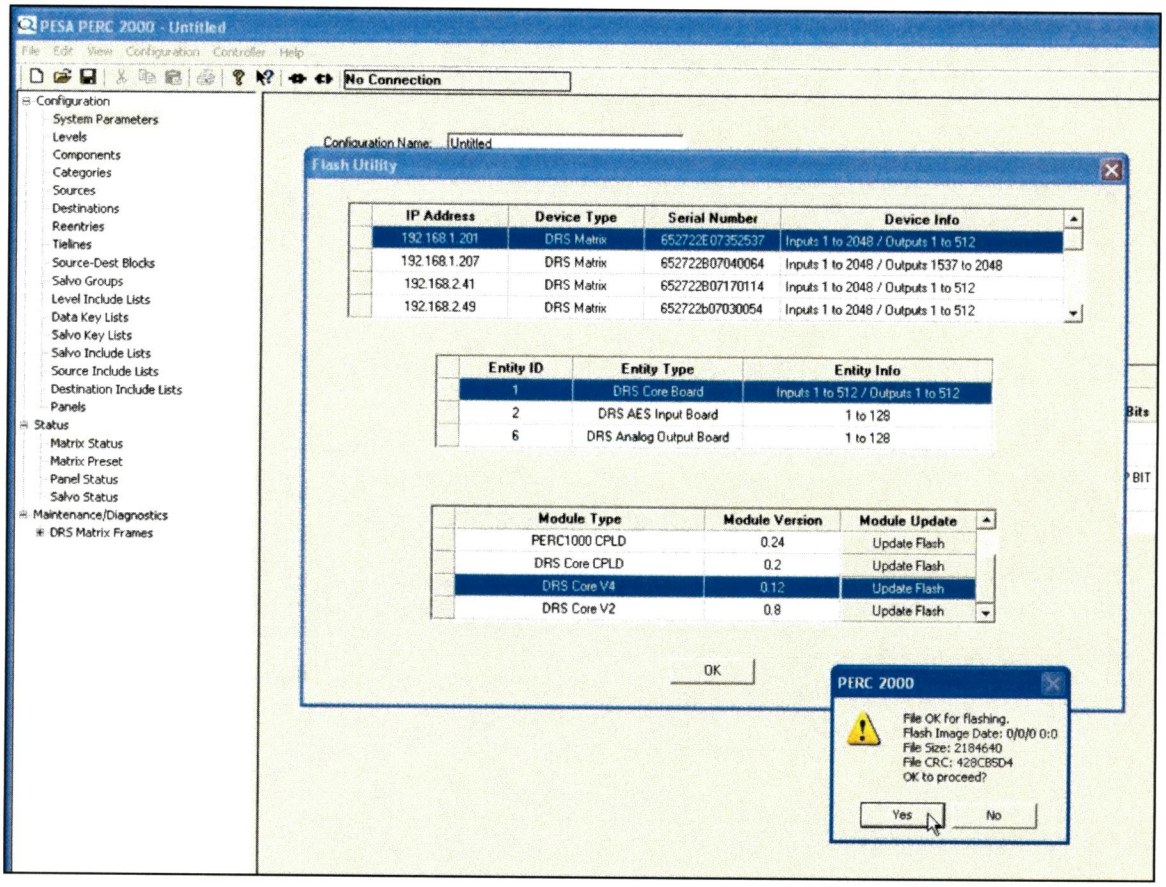

Figure 41. Caution Dialog Box

☐ 9. When the module has been reprogrammed, the GUI will display a window stating that the Flash Update was successful as shown in Figure 42. Click **OK** to clear the window.

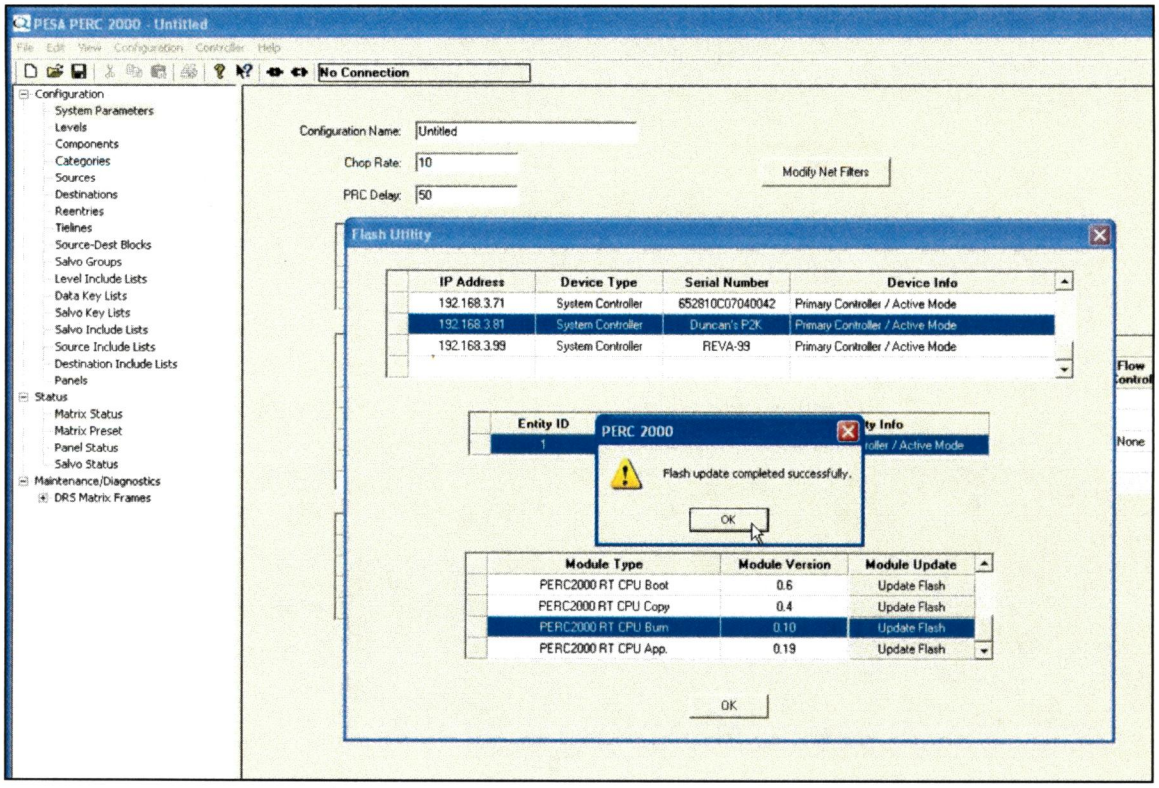

Figure 42. Flash Complete Notification Box

☐ 10. Once you have reprogrammed the DXE Core board, you will next reprogram the audio boards associated with the DXE you just completed.

Audio boards are listed in the Entity ID pane beneath the DRS Core Board entry as shown in Figure 43. Notice that the entry identifies each board as to whether it is an Input board or Output board and whether it supports AES or Analog audio. The procedure for reprogramming flash memory on the audio boards is identical to the procedure just presented for the DXE Core Board:

- Select the board you wish to reprogram from the Entity Type list. Be sure the desired entry is highlighted before continuing.
- In the Module Type column select the entry **DRS I/O V4**, open the Flash Update box and select the appropriate Flash Update file (Figure 35), as shown in Table 3, from the list.
- The "OK to Proceed?" dialog box will prompt you click on **Yes** to begin the reprogramming operation.
- Once flash update is completed the dialog box informing you that the flash operation was successful is displayed.
- Click **OK** to clear the box and repeat this procedure for ALL audio board entries in the Entity Type listing.

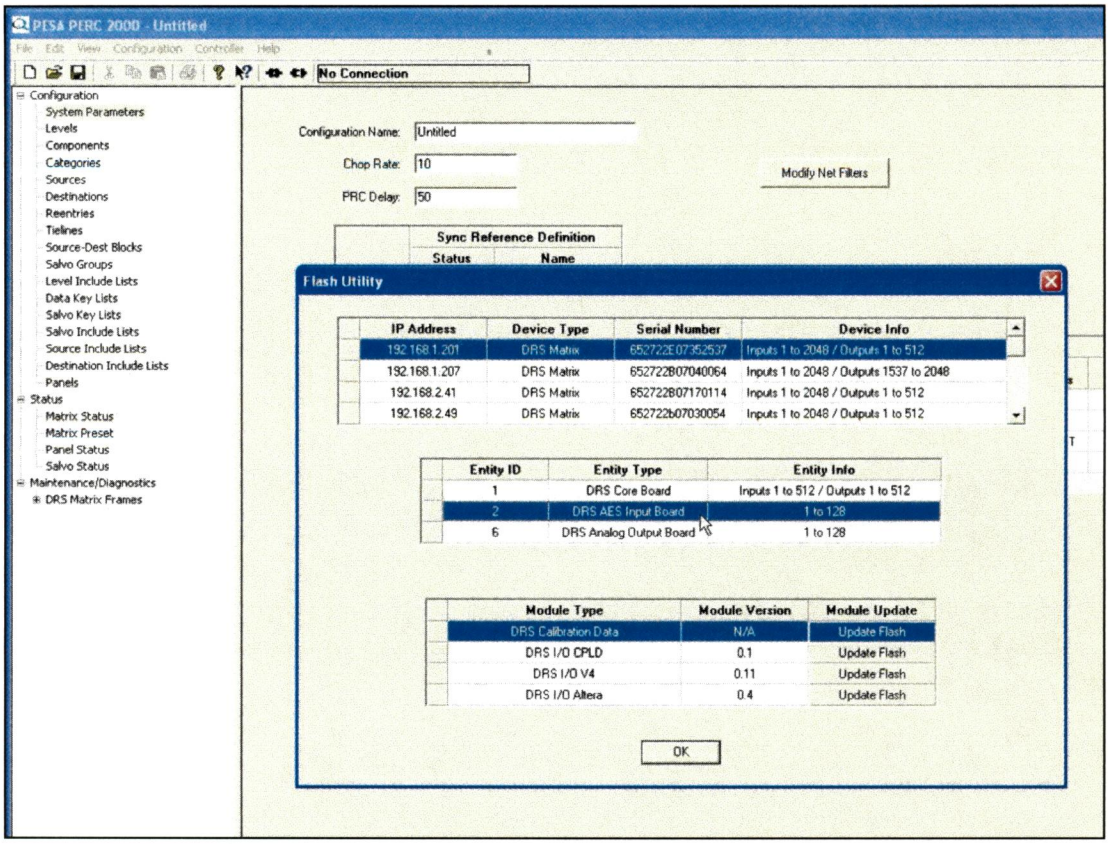

Figure 43. Entity Type Selection

Entity Type	Flash Update File
DRS AES Input Board	Cust-AesInput_Rev11_4_7-20-2007.pbn
DRS AES Output Board	Cust-AesOutput_Rev11_4_7-20-2007.pbn
DRS Analog Input Board	Cust-AnalogInput_Rev11_3_7-20-2007.pbn
DRS Analog Output Board	Cust-AnalogOutput_Rev11_3_7-20-2007.pbn

Table 3.

Do not reprogram audio boards in the matrix until the DRS Core Board reprogramming is completed.

The following steps provide an example procedure for reprogramming the AES Input Board listed in the Entity Type list under the DRS Core Board just reprogrammed. For your operation you will use the Flash Update file listed in Table 3 for the type of board (Entity Type) you are reprogramming.

☐ 11. Clicking on an entry in the Entity ID list selects that entity as the component on which you wish to perform flash memory reprogramming. For this example we want to reprogram the flash on the DRS AES Input Board. Highlight the **DRS AES Input Board** entry in the Entity ID listing as shown in Figure 43.

☐ 12. Use the scroll bar in the Module Type window to locate the module named **DRS I/O V4**, as shown in Figure 44, and click on this entry to highlight the module name. Click the cursor in the Module Update box on the command "Update Flash."

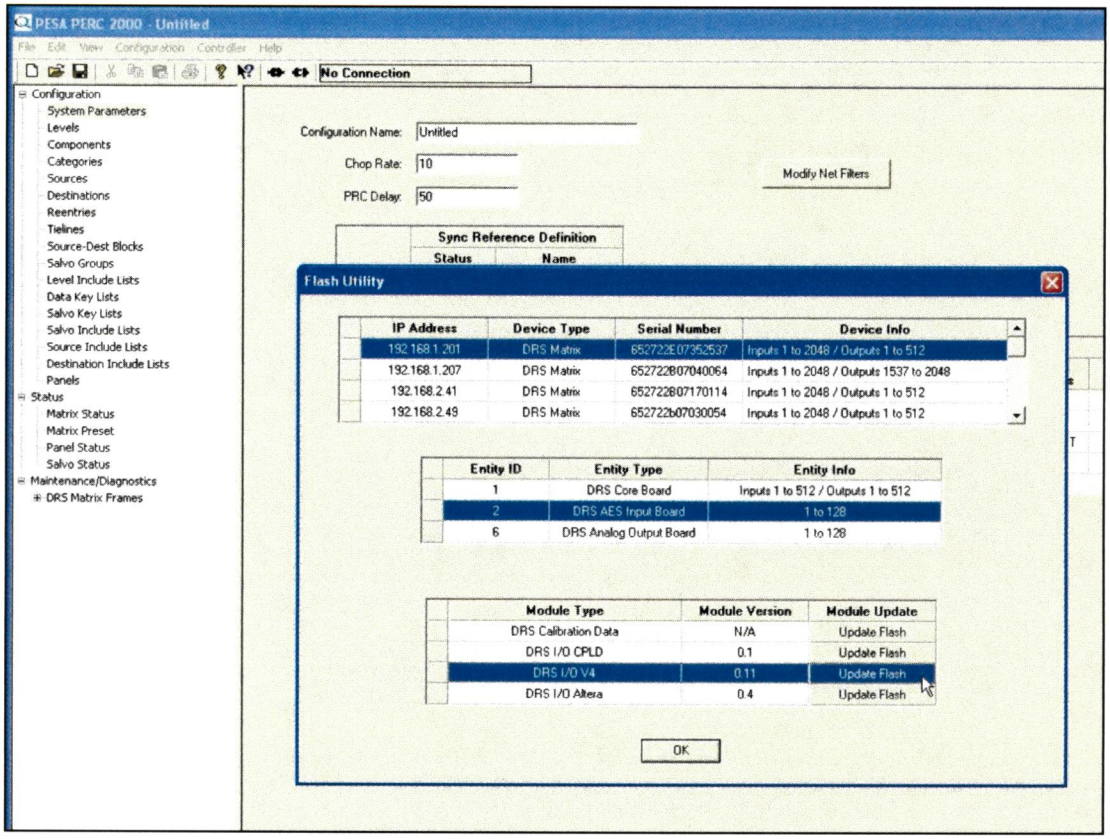

Figure 44. Update Flash Command

☐ 13. The Open Flash Update File window is displayed, Figure 45. Browse to the folder named DRS that you created in Paragraph 4 and open the folder named "CustomerUpdateImages." For our example, since we are reprogramming an AES Input board, locate and click on the file named **Cust-AesInput_Rev11_4_7-20-2007.pbn**. The file will appear in the File Name box. Click the **Open** button on the window.

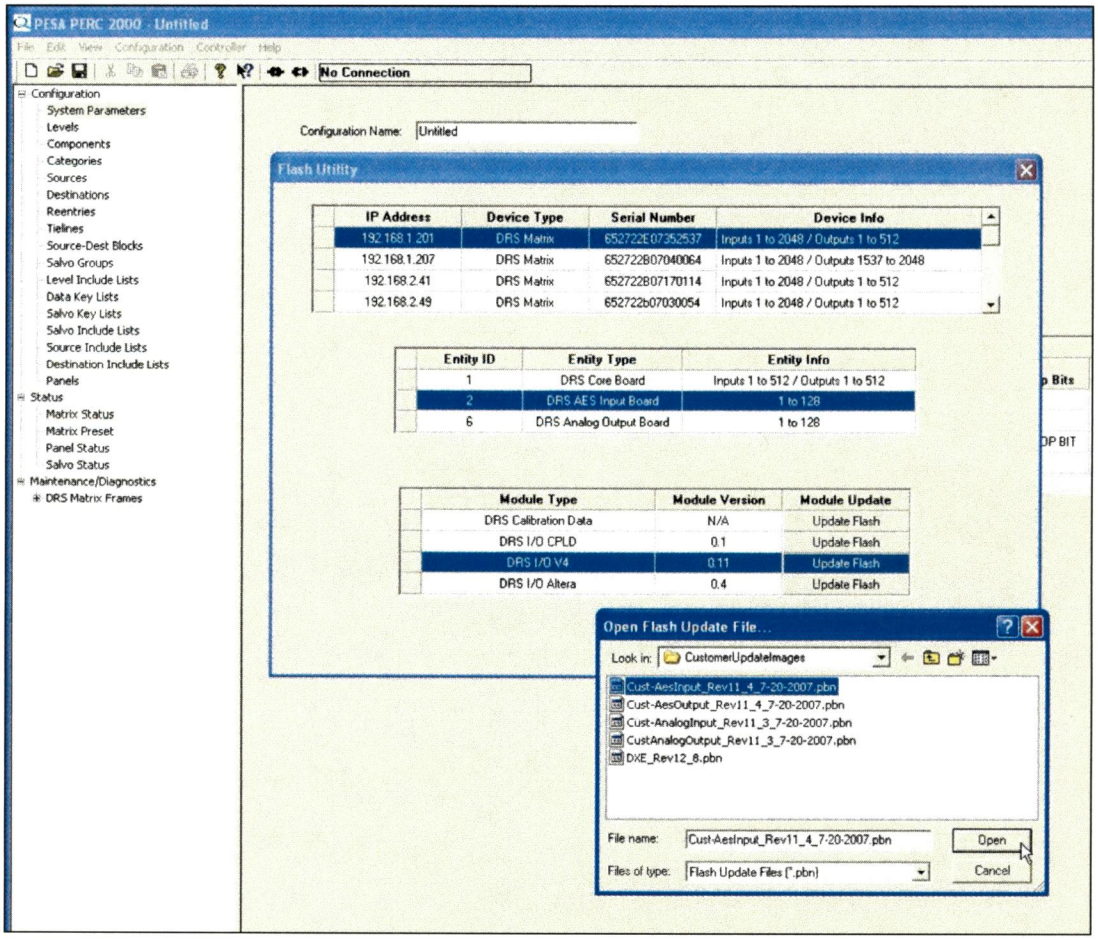

Figure 45. Open Flash Update File Browse Box

☐ 14. The OK to proceed? window, Figure 41, is displayed. Click the **Yes** button to begin the reprogramming operation.

☐ 15. When the module has been reprogrammed, the GUI will display a window stating that the Flash Update was successful as shown in Figure 42. Click **OK** to clear the window.

☐ 16. Repeat steps 11 through 15 for all remaining audio boards shown in the Entity Type list for the selected DRS Matrix. Be sure that you use the correct Flash Update file as shown in Table 3 for the board type you are reprogramming.

☐ 17. When you have completed reprogramming the DXE Core and all audio boards for a DRS Matrix group, repeat steps 4 through 16 of Paragraph 8.0 for the remaining DXE frames and associated audio boards.

☐ 18. When all DXE Core Boards and Audio Boards have been reprogrammed, continue to Paragraph 9.0.

9.0 Reload P2K Configuration and Matrix Preset Data

☐ 1. Locate the controller configuration file (filename.cfg) and the matrix preset file (filename.preset) you created in Paragraph 5.0. In the example screen, Figure 46, these are shown as **Current Config.cfg** and **Current Matrix.preset**. Make a note of the folder containing these files.

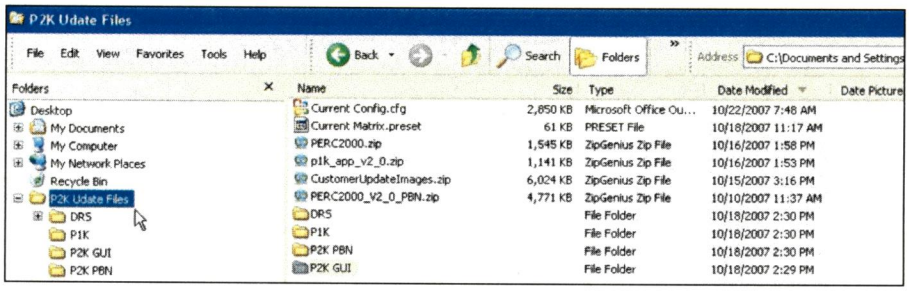

Figure 46. Configuration and Preset File Identification

☐ 2. If it is not already running, launch the newly released P2K GUI application by double clicking the PERC2000.exe file contained in the P2K GUI folder you created in Paragraph 4.

☐ 3. Click on the "Connect to Controller Symbol," Figure 47, to bring up a box with all P2K controllers listed. In most applications there will only be one controller listed. Select the P2K you wish to download the configuration data to from the list and click to activate the connection between the GUI and the controller. Once activated and communication is established, the IP address of the P2K will appear in the box to the right of the connection symbols and the box will be highlighted green to indicate the connection is functional.

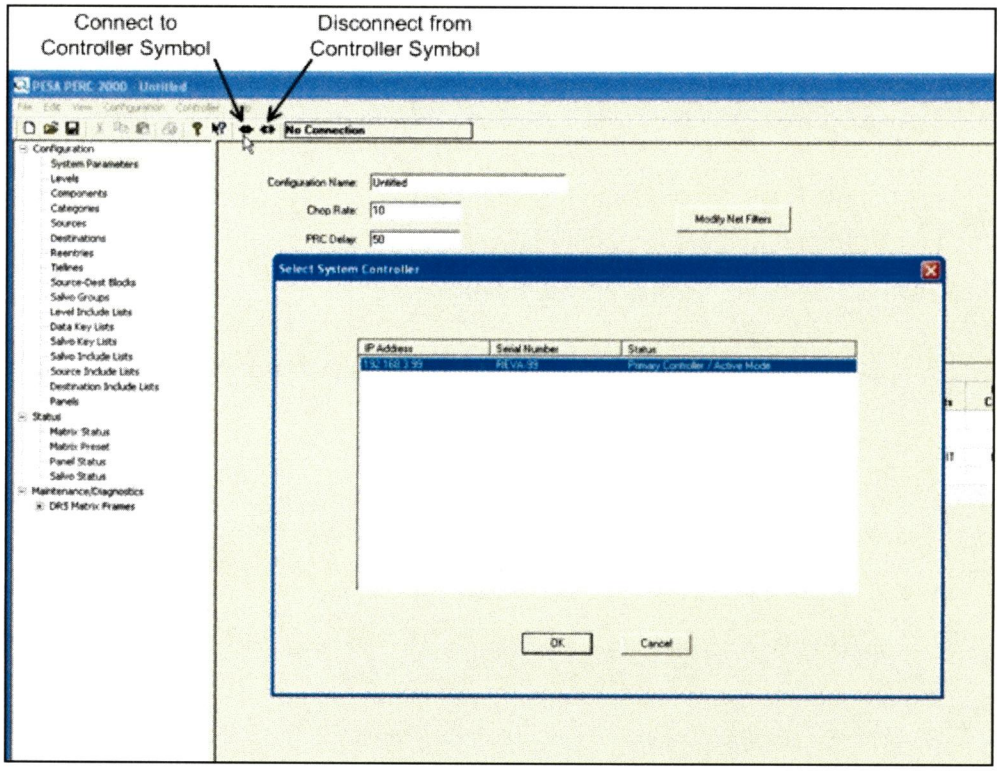

Figure 47. System Controller Selection Window

☐ 4. Ensure that the IP address of the selected P2K is displayed by the Controller Active box and that the box is highlighted green to indicate a functional connection. If the box is not green or the indicated IP address is not correct, repeat steps 1 and 2 of Paragraph 9.0 before continuing.

☐ 5. Click on the File menu in the WIndows™ menu bar and select the "Open" option from the menu as shown in Figure 48.

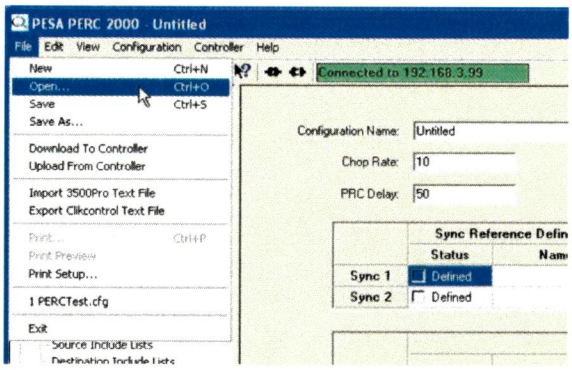

Figure 48. File Menu Listing

☐ 6. The Open PERC 2000 Config File box, Figure 49, is displayed. Browse to the folder containing the configuration file, and click on the configuration filename. With the name of the configuration file appearing in the File Name box, click "Open" to load the file as the current configuration for the P2K GUI.

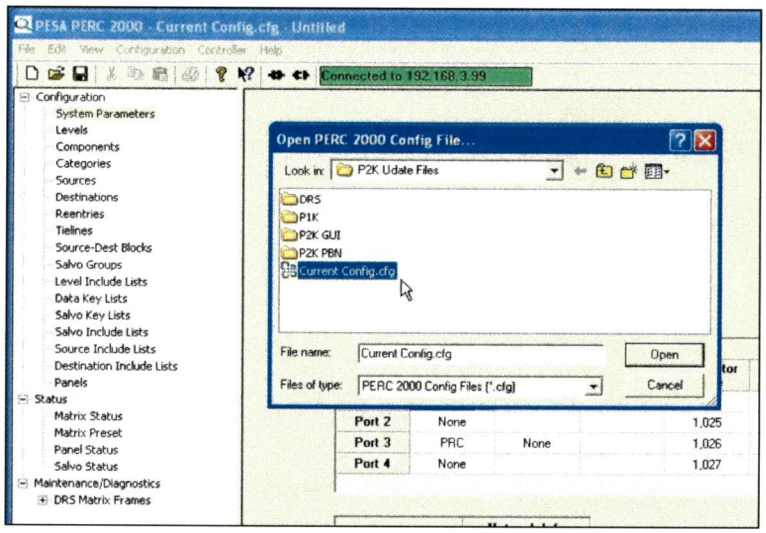

Figure 49. Configuration File Browse Box

☐ 7. Once the configuration file loads, click on the File menu in the WIndows™ menu bar and select the "Download To Controller" option from the menu as shown in Figure 50.

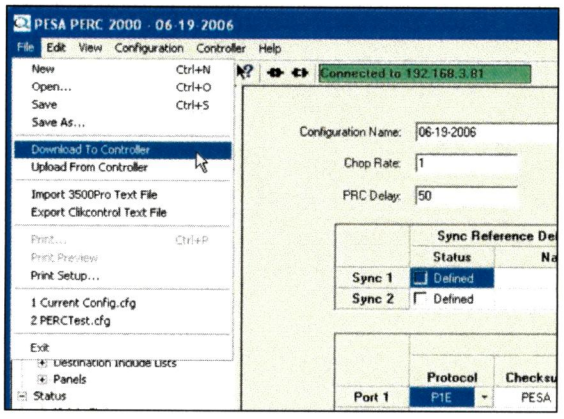

Figure 50. Download to Controller Command Location

☐ 8. The dialog box shown in Figure 51 will appear. Click **Yes** to proceed with the configuration download.

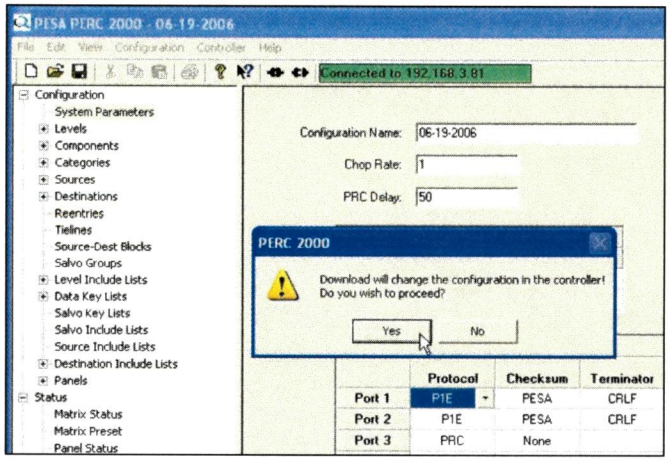

Figure 51. Caution Dialog Box

☐ 9. Once the configuration file is downloaded to the P2K controller, the dialog box shown in Figure 52 will appear. Click **OK** to clear the box.

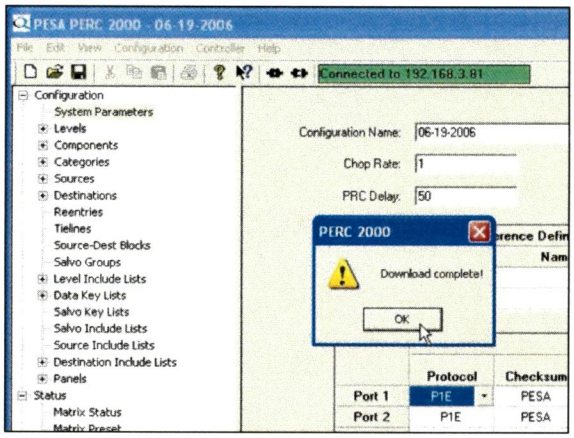

Figure 52. Download Complete Notification

☐ 10. Locate and click on the Matrix Preset command in the left pane of the GUI display, as shown in Figure 53. This action will bring up the Matrix Preset display as shown. Click the **Load** button as shown.

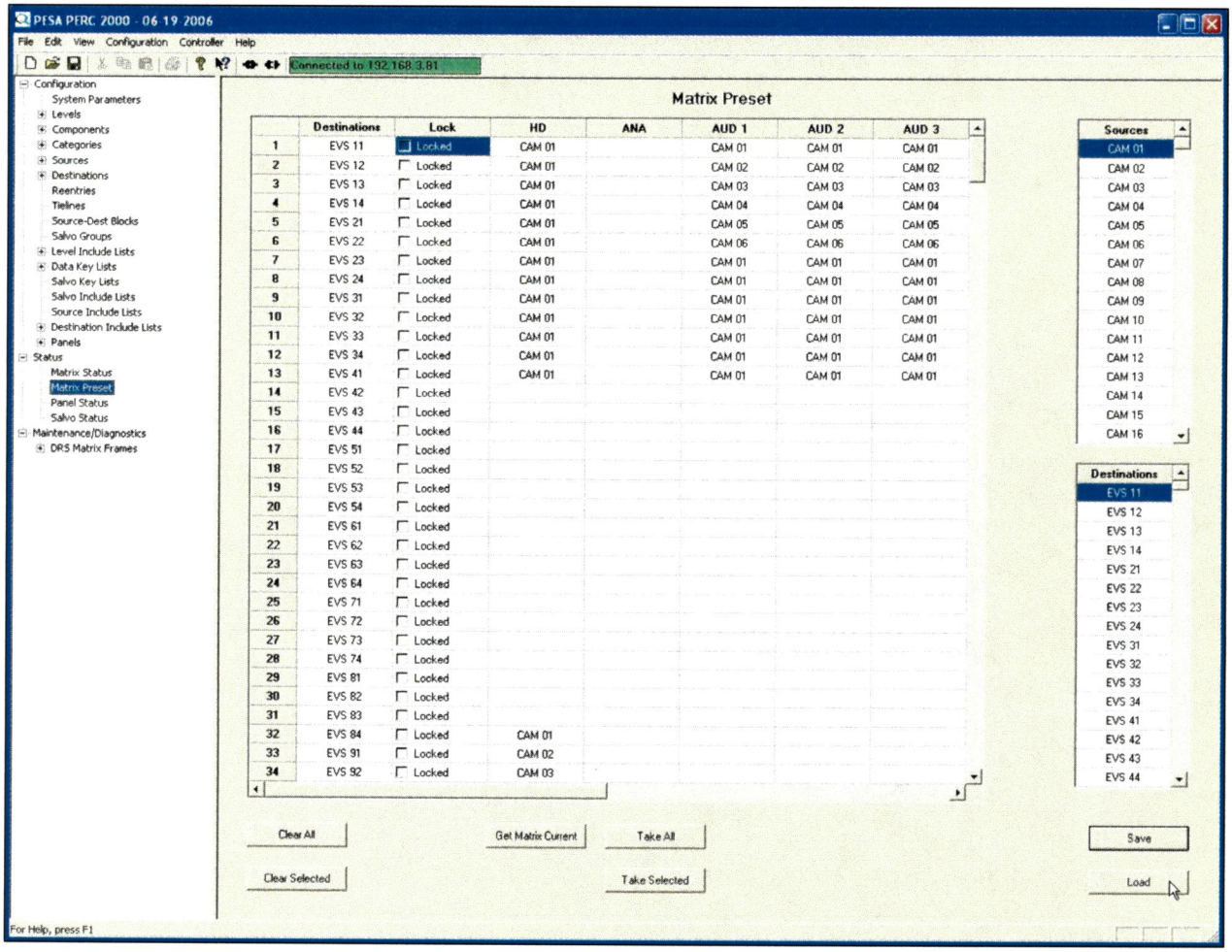

Figure 53. Matrix Preset Window

☐ 11. The Open PERC 2000 Preset File box, Figure 54, is displayed. Browse to the folder containing the matrix preset file, and click on the matrix preset filename. With the name of the preset file appearing in the File Name box, click "Open" to load the file to the P2K GUI.

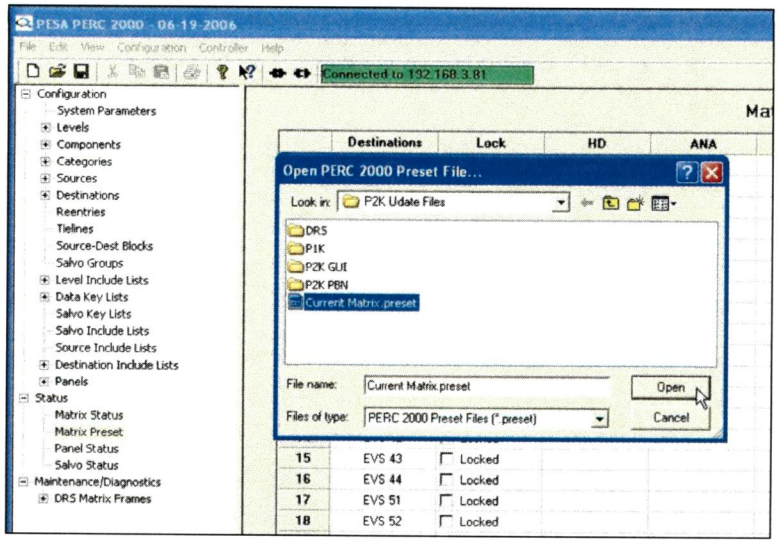

Figure 54. Preset File Browse Box

☐ 12. Once the window updates with the current matrix status, click the **Take All** button as shown in Figure 55.

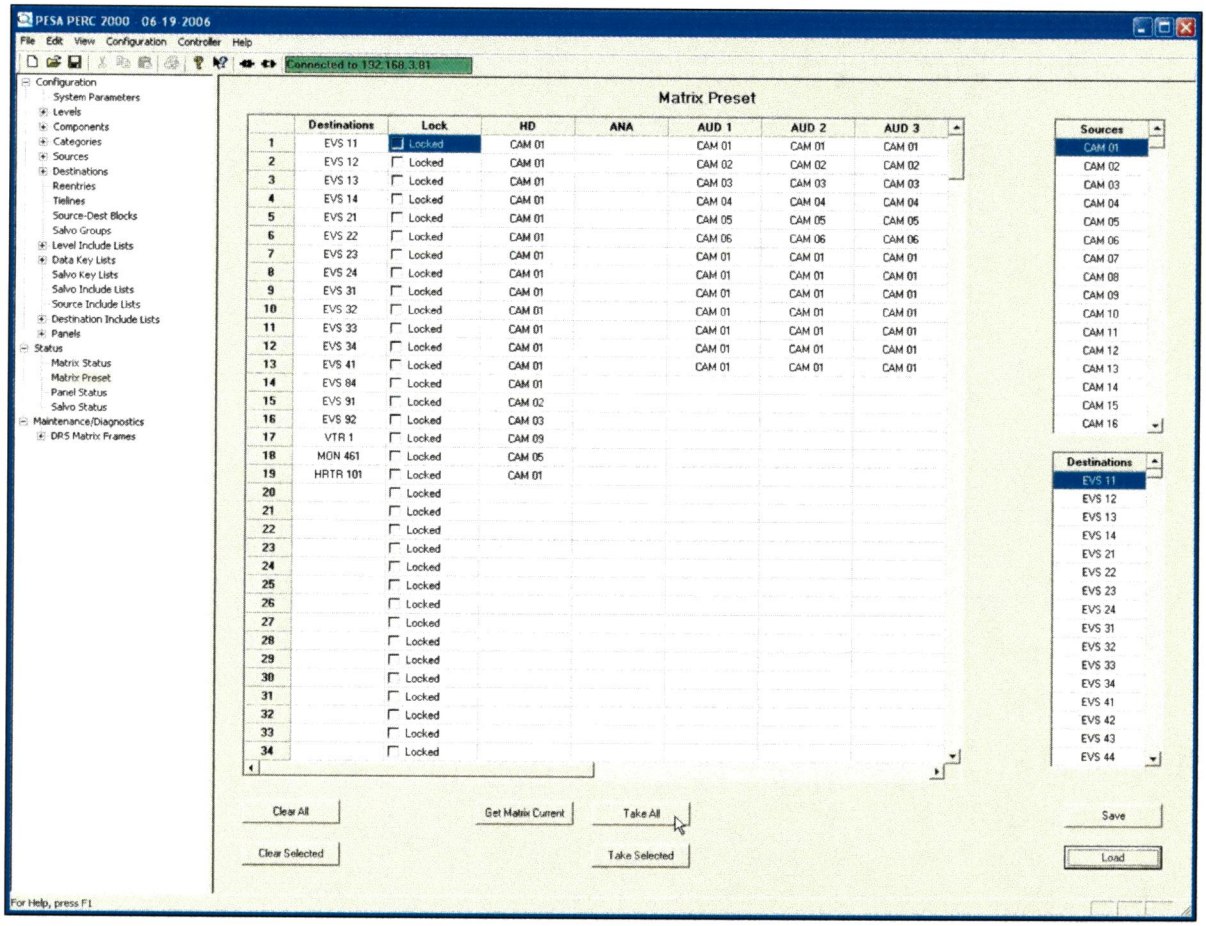

Figure 55. Take All Command Location

☐ 13. Once the matrix has updated to the status of the matrix preset file, the dialog box shown in Figure 56 will appear. Click **OK** to clear the box.

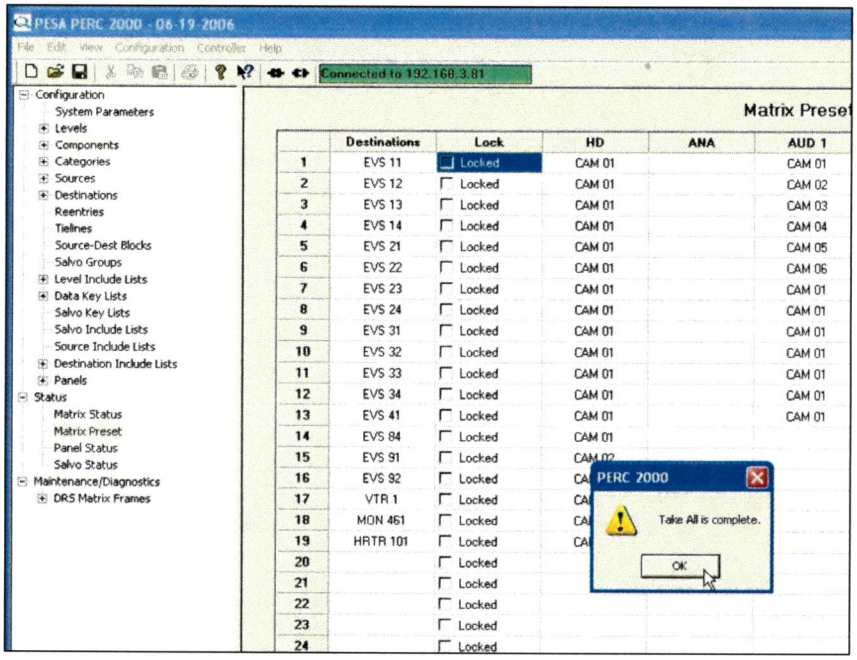

Figure 56. Take All Command Completion Notification

10.0 In the Event of Trouble

If you have any problems with the updating procedure or have any questions, contact the QuStream Customer Service Department:

by e-mail – service@qustream.com
by phone – 256-726-9222 (24/7)

11.0 Congratulations!!

You have now completed the firmware/software update to your PERC2000 System Controller(s), PERC 1000 Frame Controllers and DRS Audio Boards. The added features and functionality will greatly enhance the flexibility of your P2K controller and your entire DRS system.

Thank you very much for your time and effort in performing this procedure. At QuStream our goal is to provide you, our valued customers, with the best products and support available.


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APPENDIX A: ETHERNET CONFIGURATION

The Matrix Frame Controller supports a variety of interfaces via the Ethernet interface. These include NET PRC, HTTP (web browser), SNMP (Simple Network Management Protocol), and Telnet. To configure this access, the following items will need to be configured (refer to Table 46):

TABLE 46: Ethernet Configuration

Name	Usage	Default
DHCP On/Off	Automatically obtain an IP address from a DHCP server on the network.	On
IP Address	When DHCP is disabled, allows a fixed IP address to be assigned to the Matrix Frame Controller.	0.0.0.0
Subnet Mask	When DHCP is disabled, allows the specification of the subnet mask for the IP address.	0.0.0.0
Gateway	When DHCP is disabled, allows the specification on the default gateway.	0.0.0.0
Telnet On/Off	Enables or disables the Telnet server.	On
Telnet Port	Allows the specification of the TCP port to be used by the Telnet server.	23
Telnet Password	Specifies the password for telnet access.	<blank>
NETPRC Master/Slave	Enables or disables the NETPRC server. Note that the SNMP agent is disabled in Slave mode.	Slave
NETPRC Port	Allows the specification of the TCP port to be used by the NETPRC server.	1000
Read Community	Specifies the read community string for the SNMP agent.	public
Write Community	Specifies the write community string for the SNMP agent.	private
Trap Community	Specifies the trap community string for the SNMP agent.	public
Traps On/Off	Enables or disables SNMP trap generation.	Off
Authentication Traps On/Off	Enables or disables SNMP Authentication failure trap generation.	Off
Trap Target IP	Specifies the IP address to receive SNMP traps.	0.0.0.0

The configuration of these fields are accessed via the DB-9, RS-232 connector on the Matrix Frame Controller. Communication parameters for this serial interface default to 38400 baud, no parity, eight (8) data bits, and one (1) stop bit.

Upon connection to the serial interface (via a communications program such as HyperTerminal), enter the command 'ET' (for Ethernet) at the '>' prompt. The current Ethernet settings will be displayed (note that these settings are unavailable via the Telnet interface). For example,

```
>et
    MAC address: 02:02:02:02:02:02
    SERIAL #: AAAAAA000000001
    DHCP          : ON
    IP address    : 192.168.000.104
    Subnet mask   : 255.255.255.000
    Def Gateway   : 192.168.000.002
    NETPRC        : MASTER
    NETPRC port   : 1000
    TELNET        : ON
    TELNET port   : 23
    TELNET pass   :
    RCOMM         : public
    WCOMM         : private
    TCOMM: public
    TRAP          : OFF
    AUTH          : OFF
    TARGET        : 000.000.000.000
>
```

Help on how to change one of these settings can be obtained by entering the command 'HE ET' (for Help Ethernet) at the '>' prompt. For example,

```
>he et

Syntax: ET < DHCP [ON|OFF]  | IP [addr]     | GW [addr]     |
    :     SN [addr]      | DP [port]     | TN [ON|OFF]   |
    :     TP [tport]     | TL [pass]     | RCOMM [str]   |
    :     WCOMM [str]    | TCOMM [str]   | TRAP [ON|OFF] |
    :     AUTH [ON|OFF]  | TARGET [addr] | NP [MASTER|SLAVE] >
Where :  DHCP ON enables client automatic IP address negotiation.
    : IP [addr] allows you to set the IP address of the PMFC.
    : GW [addr] allows you to set the gateway address.
    : SN [addr] allows you to set the subnet mask.
    : DP [port] allows you to set the NETPRC IP port.
    : TN ON enables the on-board telnet server.
    : TP [port] allows you to set the telnet port.
    : TL [pass] allows you to set the telnet login password.
    :   where addr is in dotted notation (ex. 192.168.1.1}.
    :   where port is in the range [1000...65535].
    :   where tport is in the range [23,1000...65535].
    : RCOMM [str] allows you to set the SNMP read community string.
    : WCOMM [str] allows you to set the SNMP write community string.
    : TCOMM [str] allows you to set the SNMP trap community string.
    : TRAP ON enables SNMP traps.
    : AUTH ON enables authentication traps.
    : TARGET [addr] allows you to set the trap target IP address.
    : NP [MASTER|SLAVE] sets the NETPRC type of the PMFC.
```

```
>et

        MAC address : 02:02:02:02:02:0a
        SERIAL #    : EEEEEE000000001
        DHCP        : ON
        IP address  : 192.168.000.114
        Subnet mask : 255.255.255.000
        Def Gateway : 192.168.000.002
        NETPRC      : SLAVE
        NETPRC port : 1000
        TELNET      : ON
        TELNET port : 23
        TELNET pass :
        RCOMM       : public
        WCOMM       : private
        TCOMM       : public
        TRAP        : OFF
        AUTH        : OFF
        TARGET      : 000.000.000.000

>
```

For example, to set the read community string to 'pesa', enter

```
>ET RCOMM pesa
```

and press return. To view your changes, wait for the '>' prompt and enter 'ET'.

APPENDIX B: SNMP

The Cheetah Matrix Frame Controller contains an SNMP v2c agent, which is also compatible with SNMP v1 management stations. The agent supports the following standards:

RFC 1903 – SNMPv2 Textual Conventions
RFC 1904 – SNMPv2 Conformance Statements
RFC 1905 – SNMPv2 Protocol Operations
RFC 1906 – SNMPv2 Transport Mappings
RFC 1907 – SNMPv2 SNMP MIB Objects
RFC 1908 – SNMPv1 Coexistence
RFC 2011 – SNMPv2 IP MIB Objects
RFC 2012 – SNMPv2 TCP MIB Objects
RFC 2013 – SNMPv2 UDP MIB Objects

Two enterprise MIBs are used to provide full control of Cheetah Switchers. The first, PESA-TC.MIB, is a MIB, which defines some textual conventions. The second, PESA-MATRIX.MIB, contains objects, which allow SNMP-based control and monitoring of one or more Cheetah Switchers.

Both of these MIBs are available at the PESA website, www.pesa.com, for electronic download. The full-text of these MIBs are distributed on the Cheetah SW Toolkit CD that goes out with every Cheetah system.

Note that the agent within the Matrix Frame Controller implements a subset of the PESA-MATRIX MIB. The optional Group tables are reserved for implementation within the System Controller.

The agent is capable of managing multiple Cheetah Switchers. This is accomplished in two steps:

a) Connecting the Cheetah Switchers via the RS-422 Aux Frame Port described in this manual.

b) Set the Matrix Frame Controller, which is to communicate with your SNMP management application to NETPRC Master. Note that if you have redundant Matrix Frame Controllers in the Switcher, BOTH must be configured as NETPRC Master. Refer to the Ethernet section described earlier in Appendix A to accomplish this.

c) Set all other Matrix Frame Controllers, which you have connected, to the NETPRC Master controller to NETPRC Slave.

The agent will then be able to configure and control all of the Cheetah Switchers in the connected collection.

Once you have configured the Matrix Frame Controller's SNMP agent (as described in Appendix A), you may issue SNMP commands. The following commands were issued on a PC running Linux against a pair of small Cheetah Switchers.