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USER MANUAL

MODEL 429 DIAGNOSTICS AND MAINTENANCE INFORMATION TRANSFER SYSTEM (DMITS) MAINTENANCE SOFTWARE

USER MANUAL RELEASE INFORMATION	
Part Number	429-770-014-105
Date	June 23, 2009
Revision	Basic
USED FOR	
DMITS429 Setup executable	429-770-014-103, Version 1.0
DMITS429 executable	429-770-014-109, Version 1.0

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USER MANUAL

MODEL 429

DIAGNOSTIC AND MAINTENANCE

INFORMATION TRANSFER SYSTEM

(DMITS)

1.0 INTRODUCTION

This document is the User Manual for the Model 429 Diagnostic and Maintenance Information Transfer System (DMITS) maintenance software for the versions identified below:

- Setup P/N 429-770-014-103, version 1.0
- Executable P/N 429-770-014-109, version 1.0

1.1 DOCUMENT CONVENTIONS

The following formatting conventions are used in this document to facilitate readability and to help associate software screen features to the descriptive text contained herein.

TYPE	FORMAT
Software screen options, messages, buttons, field names, etc	**bold lettering**
Document Caution callout and text	**CENTERED BOLD ALL CAPS LETTERING**
Document Note callout	Centered underlined lettering
Document Note text	Centered lettering
Document cross reference links	blue underlined lettering
Software folder and subfolder listings	blue lettering

2.0 SYSTEM OVERVIEW

The DMITS software provides a GUI for calibrating, uploading and downloading maintenance information from the Integrated Avionics System (IAS). The DMITS provides interfaces to the following systems of the IAS: Display Unit (DU), Aircraft Data Interface Unit (ADIU), Flight Control Computer (FCC) and the Lighting Power Supply (LPS).

The DMITS software will be installed on a laptop computer running under XP or Vista. The laptop connects to the aircraft's Ground Service Equipment (GSE) ports via a GSE switch box, using either the RS-232 or the USB port.

2.1 INSTALLING THE MAINTENANCE PACKAGE

The 429 maintenance package consists of the following parts:

- GSE Switch Box (P/N DK-504-001-1)
- GSE Harnesses (P/N 429-079-554-101/-103)
- USB A/A Extension (P/N USB2-AA-6)
- DMITS CD-ROM (P/N 429-770-014-101); contains:
- DMITS429 Setup (P/N 429-770-014-103, v1.0)
- DMITS429 User Manual (P/N 429-770-014-105)

2.1.1 DMITS SOFTWARE

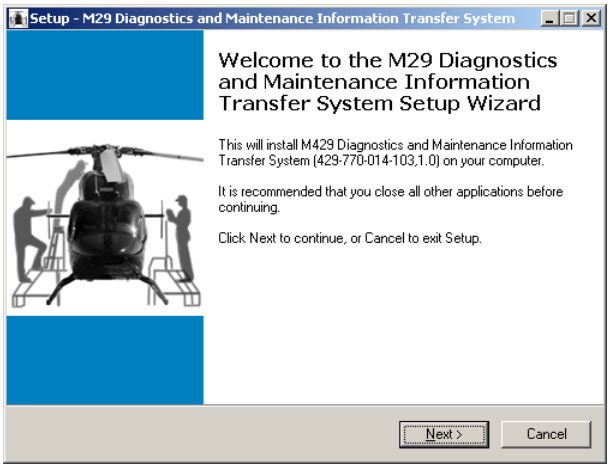
The DMITS application is installed by a self installer software tool by executing the DMITS429 setup file. The DMITS software package consists of the following:

- DMITS429 Executable (P/N 429-770-014-109, v1.0)
- DMITS429 User Manual (P/N 429-770-014-105)
- Electronic Data Recorder (EDR) data masks examples
- Software Drivers and Installation Manual for the EDGEPORT/1, RS-232/USB converter

To launch the setup, on the installation CD double click on the setup file (for Windows XP) or right click on the setup file and select **Run as administrator** (for Windows Vista):

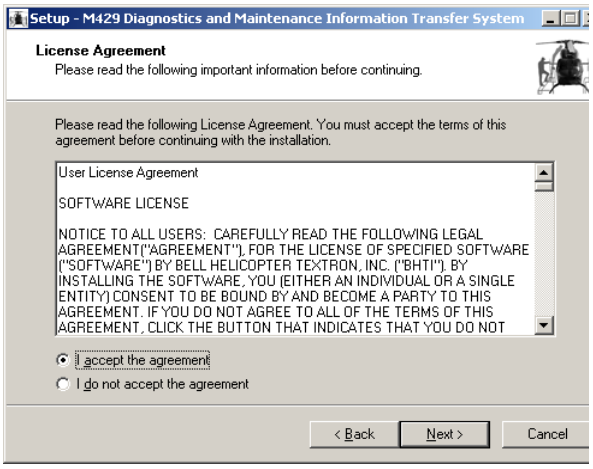
then follow the steps as explained in the following figures:

Step #1



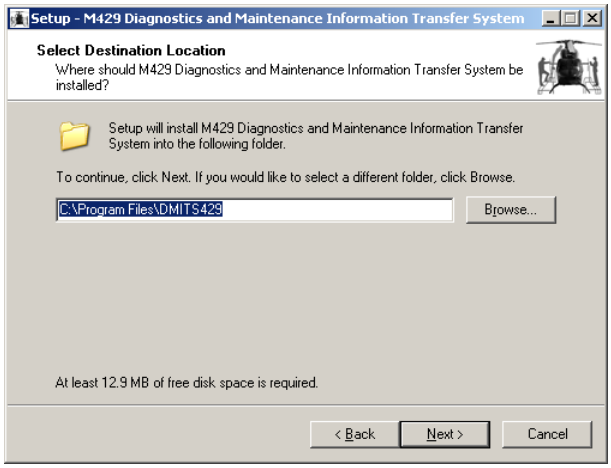
This is the introduction screen. Press the **Next >** button to continue to the next step.

Step #2



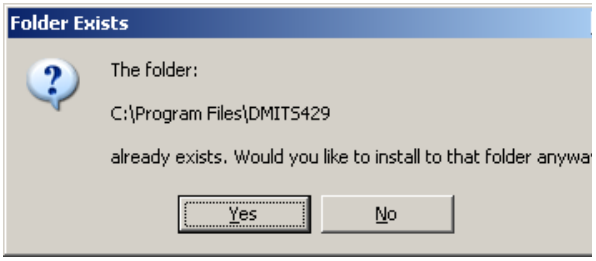
This is the license agreement screen. Review the licensing agreement; check the **I accept the agreement** button to accept the license terms, then press the **Next >** button to continue to the next step.

Step #3



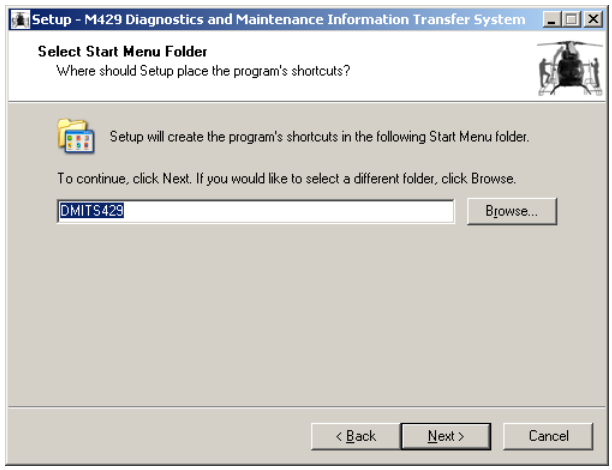
This is the installation location screen. To modify default path, type the desired path or use the **Browse** button to choose an existing path. Once the desired path is entered, click the **Next >** button to continue to the next step or the **< Back** button to return to the last step.

Step #3.1



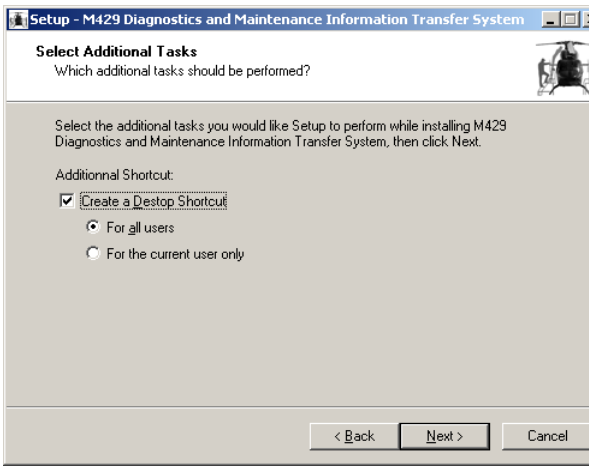
This message box will appear only if the installation path the user selected already exists. If the user is reinstalling a new release of the application over an old release, the user should select **Yes**, if not; he should make sure the folder is the desired installation path. Selecting **No** will return the user to Step #3.

Step #4



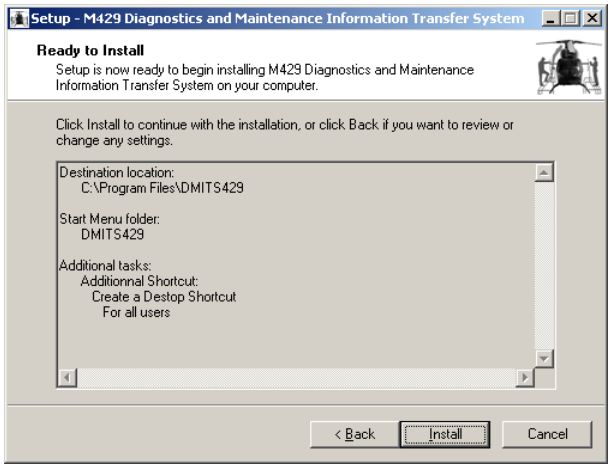
This is the Start Menu Folder screen. To modify the default program group folder, type the folder name or use the **Browse** button to choose an existing group folder. Once the desired folder group is entered, click the **Next >** button to continue to the next step or the **< Back** button to return to the last step.

Step #5



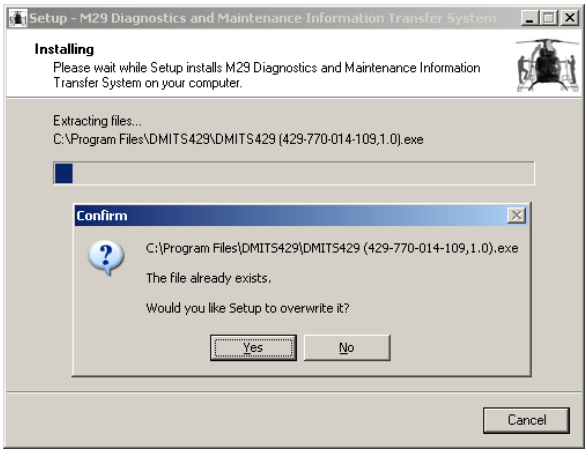
This is the Desktop Shortcut screen. To create a desktop shortcut, check the **Create a Desktop Shortcut** checkbox and select one of the shortcut creation options. Un-checking the shortcut box will forgo shortcut creation. Once the desired shortcut options are set, click the **Next >** button to continue to the next step or the **< Back** button to return to the last step.

Step #6



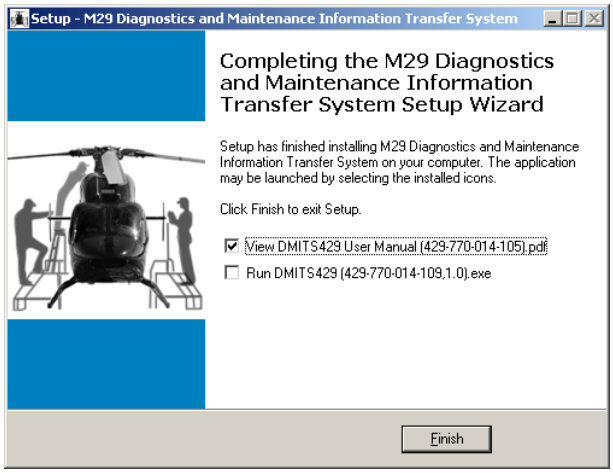
This is the Installation Confirmation screen. An overview of the selected user options is displayed for confirmation. If the options are satisfactory, proceed with installation by selecting the **Install** button. If changes need to be made, use the **< Back** button to return to the previous screen.

Step #6.1



This is the installation progress screen. The blue progress tracks installation progress. The **Confirm** message box will appear if the installer detects a file of different version in the installation folder; a file of the same version will be overwritten. User will click **Yes** to overwrite the file or **No** to keep the existing file.

Step #7

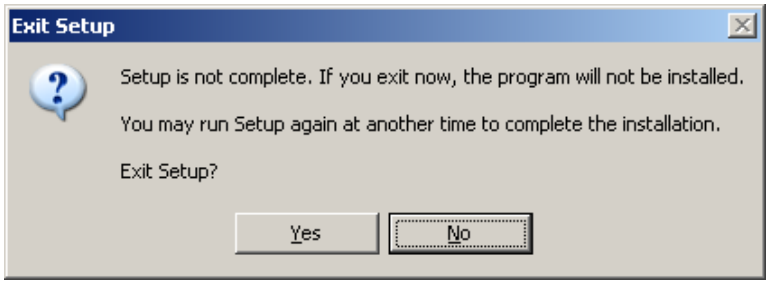


This is the installation complete screen. Press **Finish** to exit the installer. If the **View DMITS429 User Manual (429-770-014-105).pdf** checkbox is checked, the installer will open the User Manual file. If the **Run DMITS429 (429-770-014-109,1.0).exe** checkbox is checked, the installer will launch the application prior to terminating.

Note:

The {root} directory specified herein refers to the installation directory selected in Step #3 of this section.

Installation can be aborted at any time by selecting the Cancel button; the following screen will be displayed:



Choosing **Yes** will exit the installer. Selecting the **No** button will return the user to the previous screen.

In addition to installing the DMITS package in the user selected directory, the installer also performs the following tasks:

- Verifies if the operating system is XP or later; if not, installation is aborted.
- Creates an uninstall script file and places it in the application directory
- Creates a Start menu group with containing a shortcut to the application executable and one to the uninstall script file.
- Creates a desktop shortcut to the application executable (if selected in installation options)
- Creates the DMITS folder structure
- Creates an application registry key containing the installation path.
- Creates the registry framework to allow launching of the DMITS software from the RUN command box (located in the Windows Start menu).
- Installs the software drivers and installation manual for the EDGEPORT/1 RS-232/USB converter.

CAUTION

ONCE THE APPLICATION IS INSTALLED THROUGH THE INSTALLER, USER MUST NOT MANUALLY MODIFY THE PATH TO THE INSTALLATION DIRECTORY OR MODIFY THE SOFTWARE PACKAGE FILENAMES. IT IS SUGGESTED TO FIRST UNINSTALL THE APPLICATION PER SECTION 2.2.1 AND THEN RUN THE INSTALLER AGAIN AND SELECT THE DESIRED PATH THROUGH THE INSTALLER. FILES NOT PART OF THE INSTALLATION PROCESS WILL BE RETAINED IN THE OLD INSTALLATION DIRECTORY, THEY SHOULD BE MANUALLY MOVED TO THE NEW INSTALLATION DIRECTORY OR DELETED IF NOT NEEDED. ADVANCED USERS MAY AVOID REINSTALLING THE APPLICATION BUT WILL HAVE TO MANUALLY EDIT THE CREATED SHORCUT TARGETS AND MODIFY THE FOLLOWING REGISTRY KEYS TO REFLECT THE CHANGES:

HKEY_LOCAL_MACHINE\SOFTWARE\MICROSOFT\WINDOWS\CURRENTVERSION\APP PATHS\DMITS429.EXE\(DEFAULT)

HKEY_LOCAL_MACHINE\SOFTWARE\MICROSOFT\WINDOWS\CURRENTVERSION\APP PATHS\DMITS429.EXE\PATH

HKEY_LOCAL_MACHINE\SOFTWARE\DMITS429\ INSTALL_DIR

HKEY_CLASSES_ROOT\DMITS429.FILES\DEFAULTICON

2.1.2 USB/RS-232 Converter

The USB/RS-232 converter lets the user use the laptop's USB ports for connecting to GSE switch box rather than using the serial ports. To install the USB/RS-232 converter, follow the steps as explained in the following figures:

Step #1

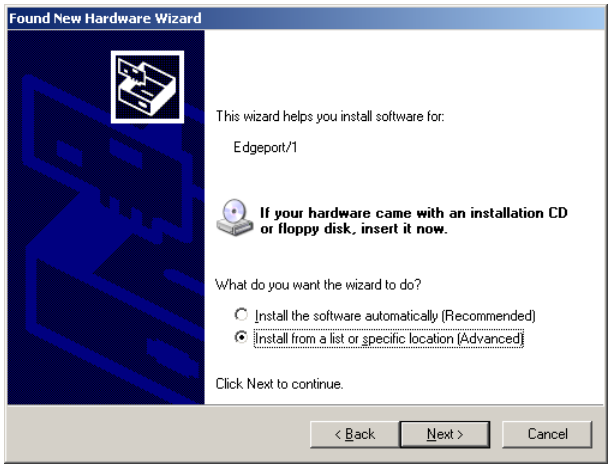
Connect one end of the USB extension cable in an available USB port on the laptop, and the other end to the USB wall mount connector of the GSE switch box.

In the Windows notification area, **Found New Hardware** is displayed and the New Hardware Wizard is displayed.

Step #2

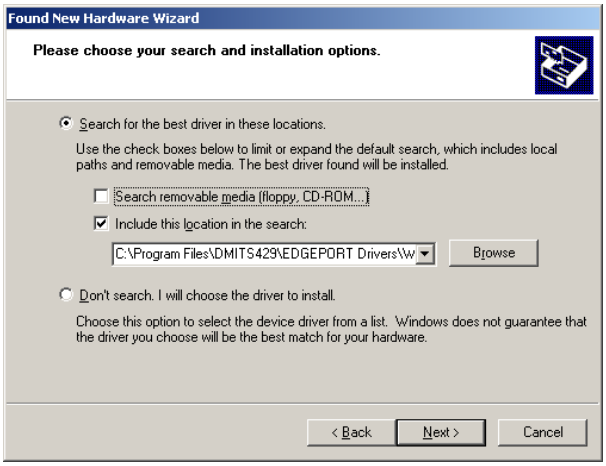
On the New Hardware Wizard, check the **No, not this time** radio button and click the **Next >** button.

Step #3



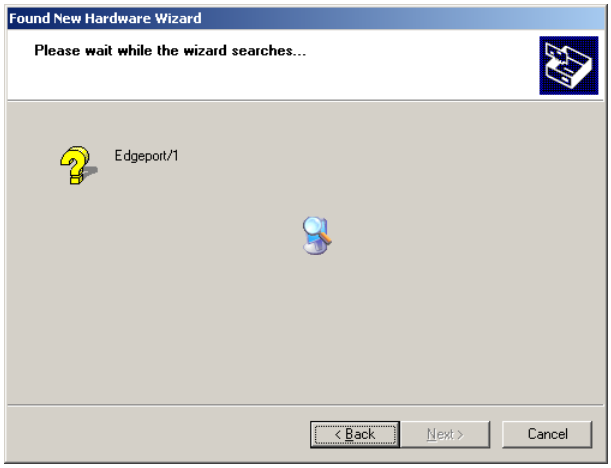
On the Install mode selection screen, check the **Install from a list or specific location (Advanced)** radio button and click the **Next >** button.

Step #4



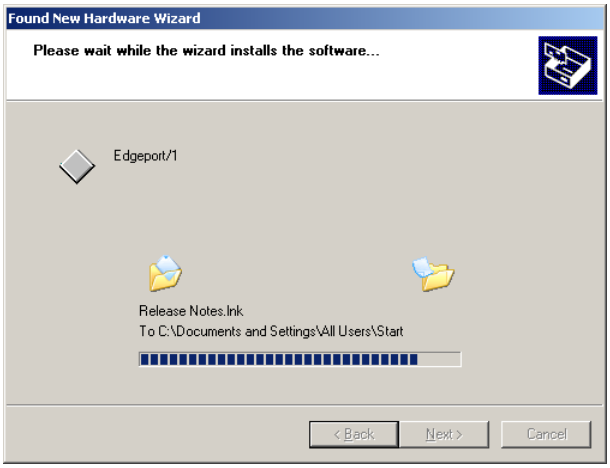
On the Install Options selection screen, check the **Search for the best driver in these locations** radio button, uncheck the **Search removable media (floppy, CD-ROM…)** checkbox and check the **Include this location in the search:** checkbox. Use the **Browse** button and locate the {root}\EDGEPORT Drivers\Win2k\ folder. Press **Next >** when ready.

Step #5



The installer will search for the appropriate hardware installation files. **Edgeport/1** should be displayed in the window.

Step #5.1

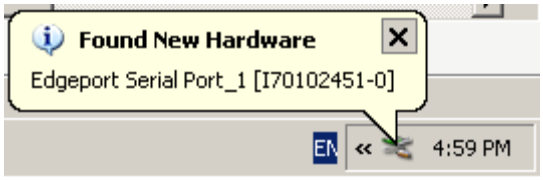


Once located, the installer will automatically proceed to the installation. Installation progress is displayed in the window.

Step #6

When installation is completed, the status screen will be displayed. Ensure installation is successful, then click the **Finish** button.

Step #7

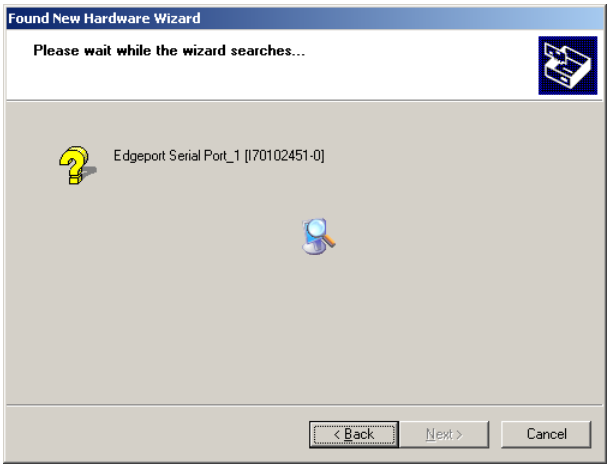


Depending on past installations, in the Windows notification area, a **Found New Hardware** message may be displayed and the New Hardware dialog box may be displayed. If such a message is displayed, continue with the following steps, if not, the installation is complete.

Step #8

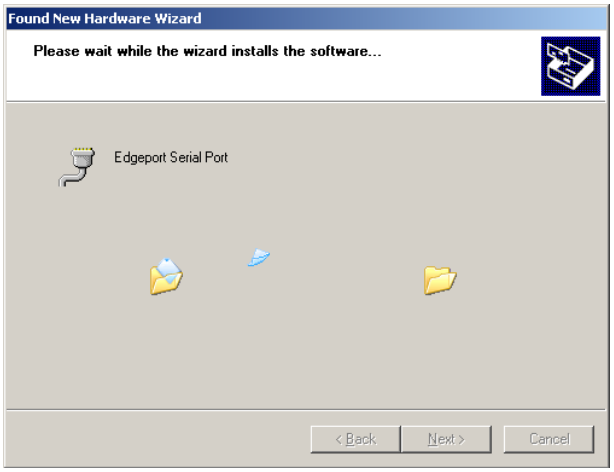
Repeat steps #2, #3, and #4.

Step #9



The installer will search for the appropriate hardware installation files**.**
Edgeport Serial Port_1 [actual serial #] should be displayed in the window.

Step #9.1



Once located, the installer will automatically proceed to the installation.

Step #10

When installation is completed, the status screen will be displayed. Ensure installation is successful, then click the **Finish** button.

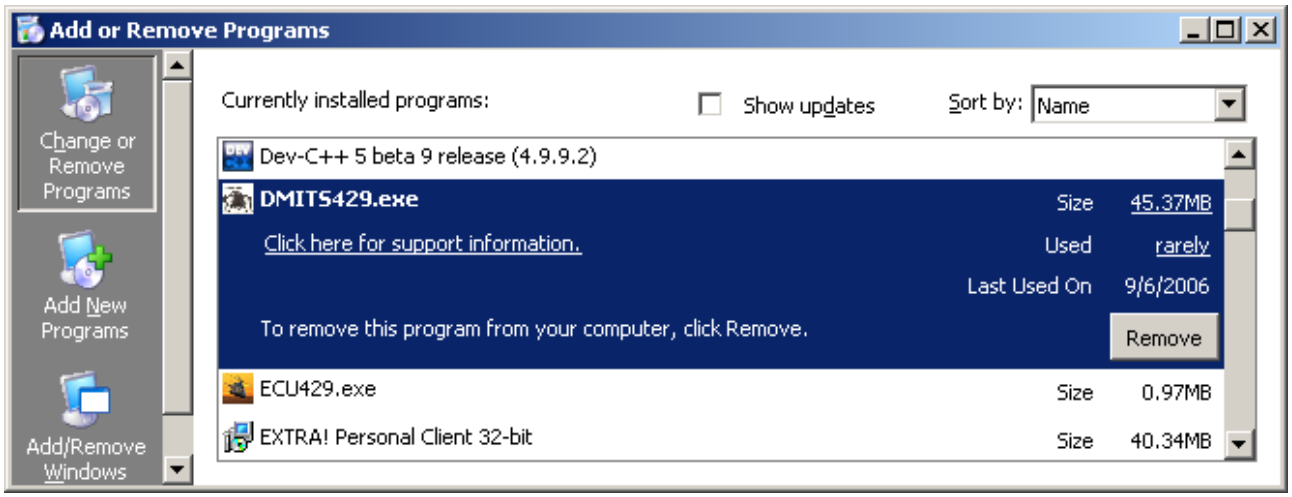
2.2 UNINSTALLING THE SOFTWARE

2.2.1 DMITS Software

When the software package is installed through the installer, an uninstall script file (**unins000.exe**) is created. The script is placed in the {root}\uninst\ folder. A shortcut to the uninstall (**Uninstall DMITS429**) script file is also created in the start menu group. To uninstall the DMITS application, double click the uninstall script file (for Windows XP) or right click on the uninstall script file and select **Run as administrator** (for Windows Vista):

or click the uninstall script shortcut (for Windows XP) or right click on the uninstall script shortcut and select **Run as administrator** (for Windows Vista) in the appropriate start menu group:

or use the Add or Remove Programs (for Windows XP) or Program and Fea**tures** (for Windows Vista) application from the **Windows Control Panel**:

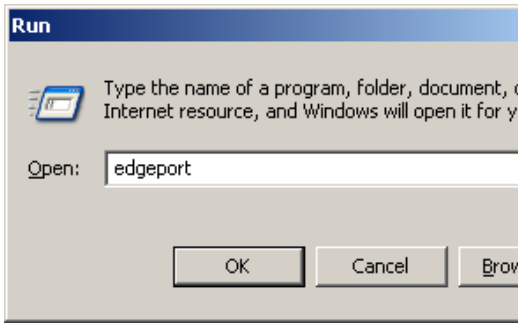


All files installed by the installer will be deleted at uninstall. If no other files were created in the application directory, the folder will also be deleted. Files not part of the initial DMITS software package installation will not be deleted and will remain in the application folder after uninstall.

2.2.2 USB/RS-232 Converter

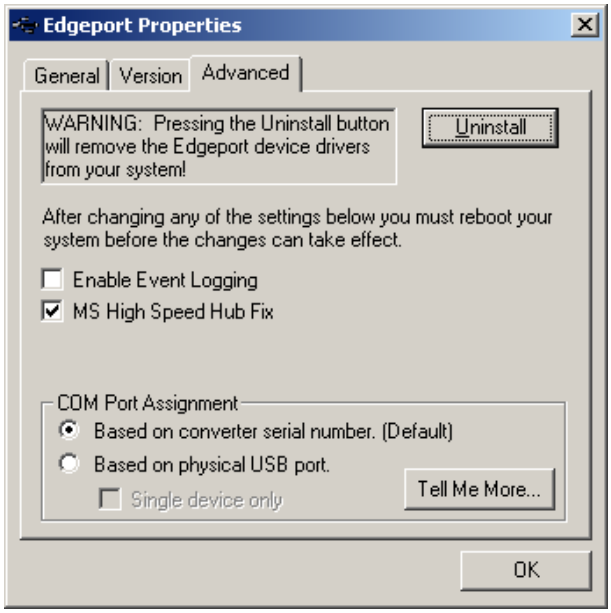
To uninstall the USB/RS-232 converter, follow the steps as explained in the following figures:

Step #1



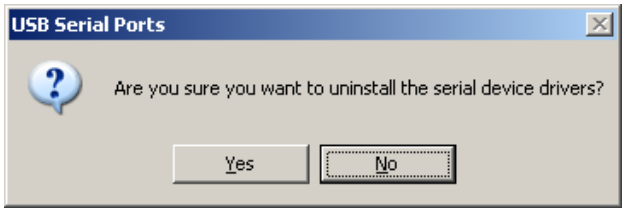
From the **Run** line command utility (located in the Windows Start Menu), type **edgeport** and press the **OK** button.

Step #2



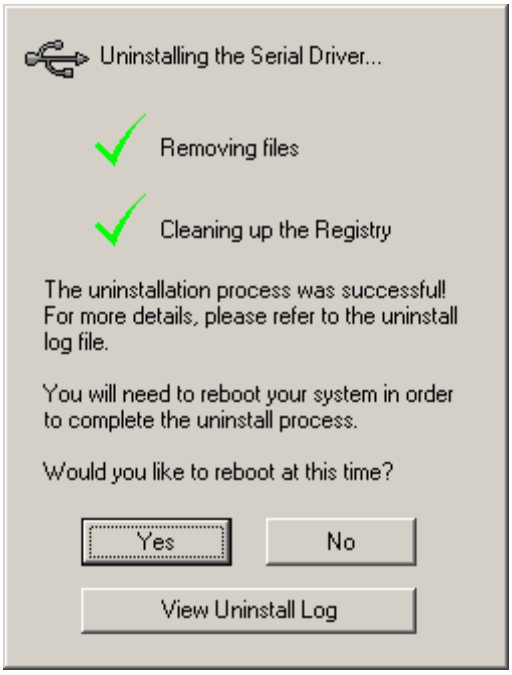
From the **Edgeport Properties** application, select the **Advanced** tab. Check the **Based on converter serial number. (Default)** radio button and press the **Uninstall** button.

Step #3



A confirmation message box appears; press the **Yes** button to continue with the uninstall process.

Step #4



The uninstall screen is displayed with green status arrows representing successful un-installation tasks. Ensure all tasks are successful, then press **Yes** to reboot the laptop.

2.3 MICROSOFT WINDOWS AND LAPTOP SETTINGS

The following Microsoft Windows and laptop PC settings are recommended for proper operation of the maintenance application:

- Users should be logged in as administrator on the laptop
- For Windows Vista users, always run the application as the administrator (right click and select **Run as administrator**) when User Account Control (UAC) is enabled
- Alternatively, Windows Vista users may elect to turn off UAC to avoid the need to right click to run the application. To turn off UAC: from the **Control Panel**, select **Classic View**, open the **User Accounts** screen, select the **Turn User Account Control on or off** option, uncheck the **Use User Account Control (UAC) to help protect your computer** box then press the **OK** button
- Laptop screen savers should be set to more than five minutes
- Any laptop PC power or battery saving features should be disabled
- Select a screen resolution of a least 1024 by 768 pixels using one of the laptop's native screen sizes
- The printer used should be of the post-script type

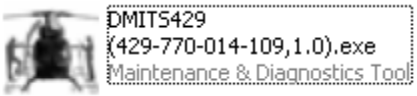
Refer to the Microsoft Windows User's Guide and laptop PC user documentation.

2.4 GENERAL GUIDELINES

The various screens (windows) that are shown for this tool are designed to keep the standard philosophy of all programs developed in the Windows environment, and to ensure a maximum of security in the user's actions.

2.4.1 Running The DMITS Application

There is four ways to launch the application. The first one is to open the installation folder and double click on the application icon (for Windows XP) or right click on the application icon and select **Run as administrator** (for Windows Vista):

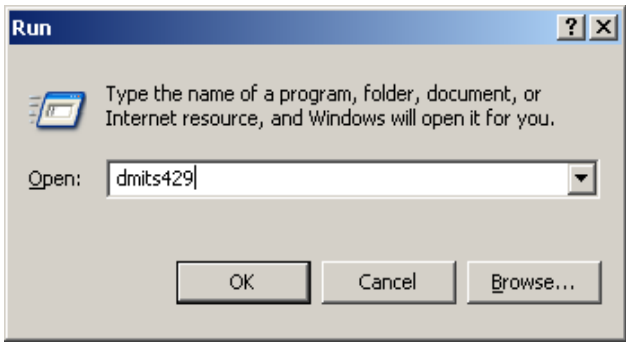


The second way is to double click the desktop shortcut (for Windows XP) or right click on the desktop shortcut and select **Run as administrator** (for Windows Vista). This will only be available if the desktop shortcut was created at installation time.

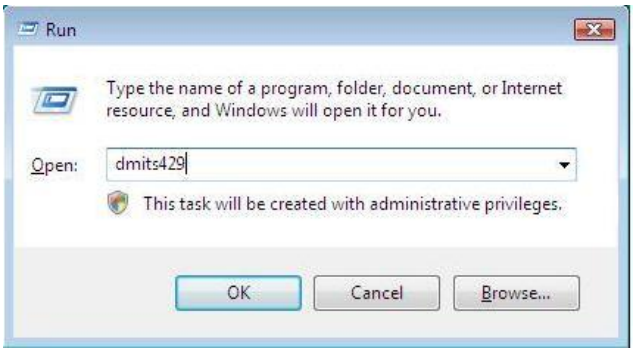
The third way to start the application is by clicking the shortcut created in the start menu group (for Windows XP) or right click on the shortcut created in the start menu group and select **Run as administrator** (for Windows Vista):

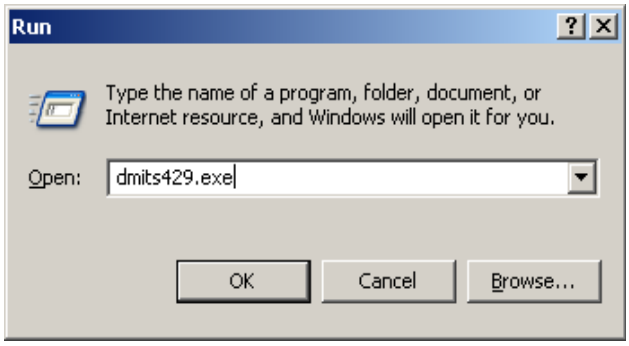
The fourth way is to use the Run line command utility located in the Windows Start Menu, using either of the following (case insensitive). For Windows Vista, ensure the **This task will be created with administrative privileges** message is displayed (UAC turned off, see section 2.3 for details); if not, select one of the other three launching methods.

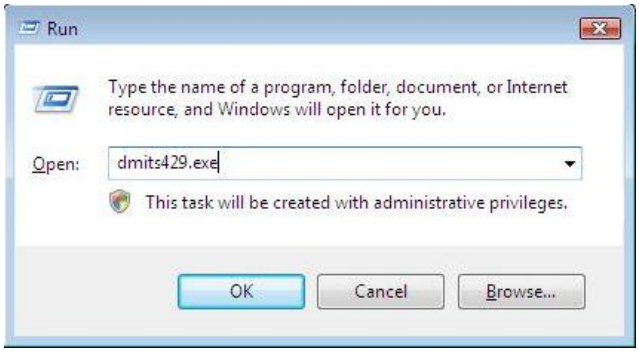
Windows XP



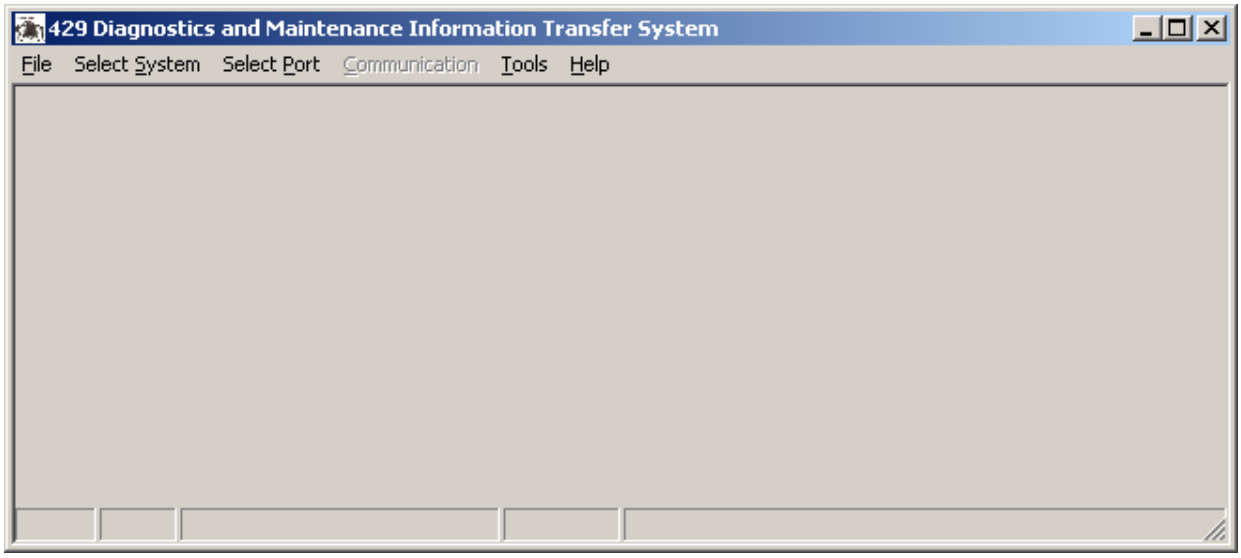
Windows Vista




Run
Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.
Open:
dmits429.exe
OK
Cancel
Browse...


Run
Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.
Open:
dmits429.exe
This task will be created with administrative privileges.
OK
Cancel
Browse...

When the application is launched, it will appear without any configuration.



Before maintenance operations may be carried out, the user will have to select a system and a communication port from the appropriate drop-down menus. Refer to section 3.0 for details on DMITS software operation.

2.4.2 Dynamic Menus

Menus within DMITS are dynamically configured to match the state of execution of the application. Menus and menu items are contextual and may be added/removed; this scheme informs the user of the selected system's available maintenance functions. Menus and menu items may also be enabled/disabled; this scheme informs the user of possible/impossible options for the current execution state.

System specific menu configuration occurs in the following menus:

- The **View** horizontal drop down menu, located under the **File** drop down menu.
- The **Communication** drop down menu.
- The **Upload File Editor** horizontal drop down menu, located under the **Tools** drop down menu.

The **Select Port** drop down menu is also dynamically populated to show the laptop's available serial communication ports.

More details on menus may be found in section 3.1.

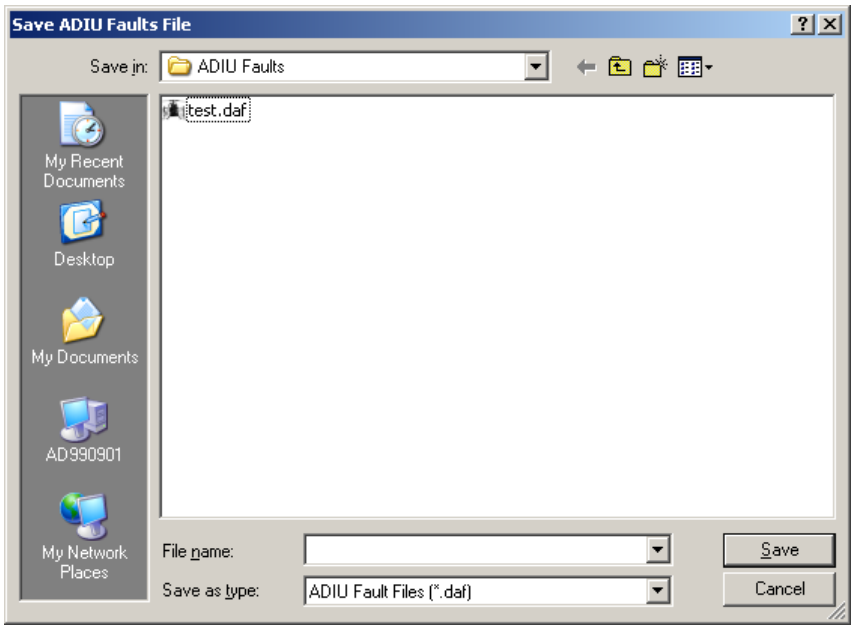
2.4.3 Maintenance Files

Maintenance files are stored in the application directory in a predefined folder structure. File extensions associated to maintenance functions are assigned at installation time. The following table lists the folder and file extension for each maintenance function.

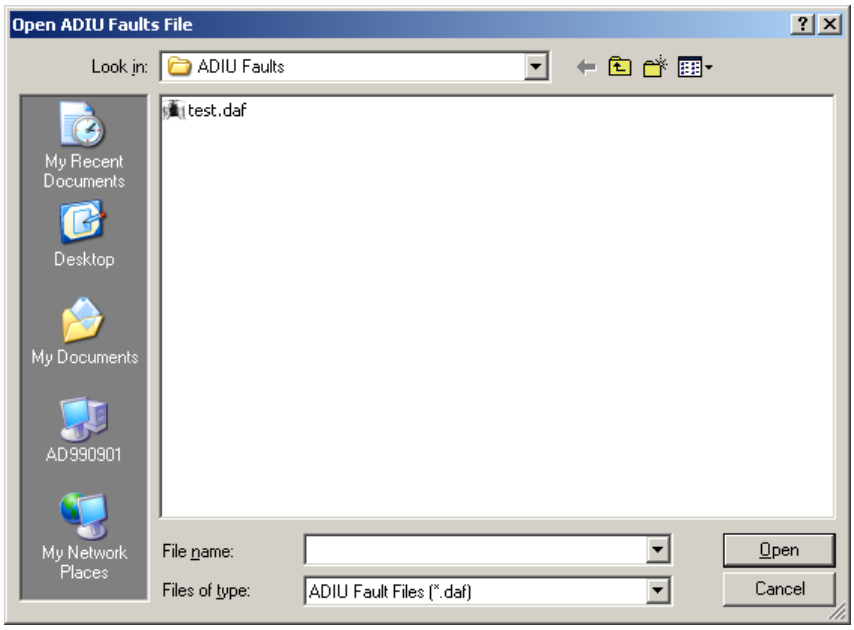
Functions				Storage Folder	File Type
View	Upload	Download	Edit		
√	√		√	{root}\DU\EDR Data Mask\	*.udm
√	√		√	{root}\DU\Normal Checklist\	*.unc
√	√		√	{root}\DU\Emergency Checklist\	*.uec
√	√		√	{root}\DU\Programmable CAS\	*.upc
√		√		{root}\DU\DU Faults\	*.ddf
√		√		{root}\DU\EDR Data\	*.csv
√	√	√	√	{root}\ADIU\Aircraft Data\	*.adf
√		√		{root}\ADIU\ADIU Faults\	*.daf
√		√		{root}\ADIU\Exceedances\	*.dex
√		√		{root}\ADIU\Chip History\	*.dch
√		√		{root}\ADIU\Aircraft Flight Log\	*.dal
√		√		{root}\ADIU\Timers Counters\	*.dtc
√		√		{root}\ADIU\Power Assurance\	*.dpa
√	√	√	√	{root}\LPS\Dimming Table\	*.csv
√		√		{root}\LPS\Fault Log\	*.dfl
√		√		{root}\LPS\Status Data\	*.dsd
√		√		{root}\LPS\Version Data\	*.dvd
√		√		{root}\LPS\Table CRC\	*.dcr
√		√		{root}\FCC\Faults & Events\	*.dfe
√		√		{root}\FCC\Rigging Data\	*.drd

2.4.4 File Saving/Opening

When running a maintenance function, the OPEN FILE and SAVE FILE dialog boxes will default to the maintenance functions predefined folder path. It is highly recommended that files be saved in their predefined folders as the OPEN FILE and SAVE FILE dialog boxes apply selective masking on file extensions; therefore, a misplaced file will not appear in the default folder of the OPEN/SAVE FILE dialog boxes.



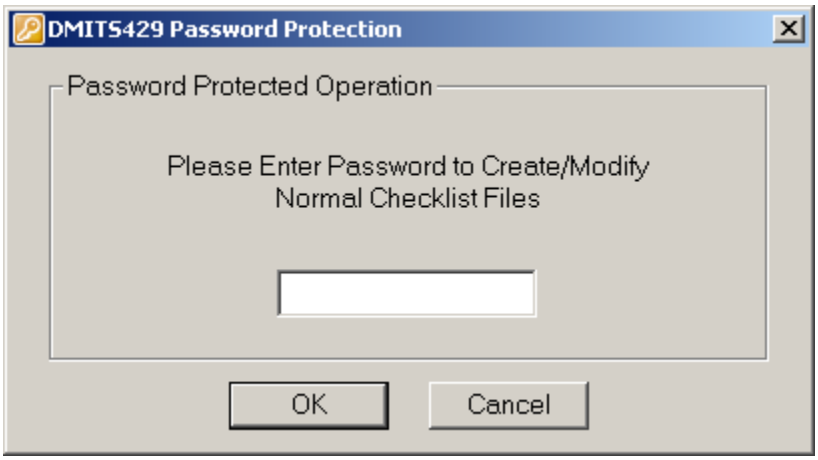
The example above depicts the SAVE FILE dialog box following a download of the ADIU Faults maintenance function. The dialog box defaults to the {root}\ADIU\ADIU Faults\ folder. The dialog box will masks all files that do not have the *.daf file extension.



The example above depicts the OPEN FILE dialog box following the selection of the View ADIU Faults function. The dialog box defaults to the {root}\ADIU\ADIU Faults\ folder. The dialog box will masks all files that do not have the *.daf file extension.

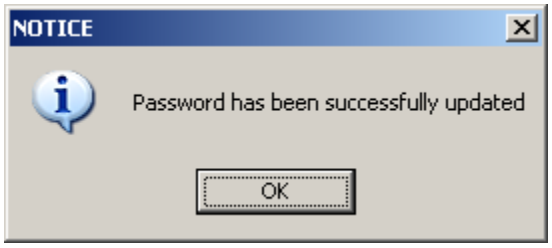
2.4.5 Password Protection

Sensitive maintenance functions are password protected. Password protected functions include: accessing the Normal/Emergency Checklist File Editor, accessing the Programmable CAS File Editor, uploading Programmable CAS files and clearing Programmable CAS non volatile memory. When one of these functions is selected, the password caption dialog box is displayed. User must enter the application's password to access the function. Default password after installation is "**admin**" (without the brackets).



Password may be modified at any time by selecting the **Tools -> Change Password** menu item; the password change dialog box is displayed:

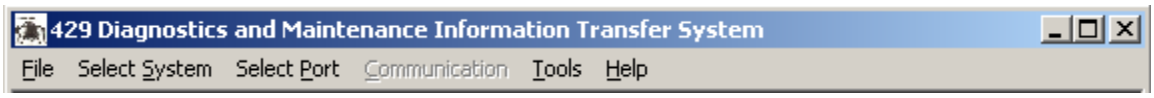
To change the password, user must enter the old password in the **Old Password:** field then enter the desired password in both the **New Password:** and the **Confirm New Password:** fields. The password must contain between 4 and 15 characters. After successfully changing the password, a confirmation message box is displayed:



3.0 DMITS INTERFACE

3.1 MENUS

DMITS software relies on the main menu to let the user navigate the different available options. The basic main menu architecture includes 6 drop down menu selections: **File**, **Select System**, **Select Port**, **Communication**, **Tools** and **Help**:



File: The **File** drop down menu regroups menu items related to file operations. This menu option is disabled if an I/O communication task is in progress.

Select System: The **Select System** drop down menu regroups menu items related to system selection. This menu option is disabled if an I/O communication task is in progress.

Select Port: The **Select Port** drop down menu regroups menu items related to communication setup. This menu option is disabled if an I/O communication task is in progress.

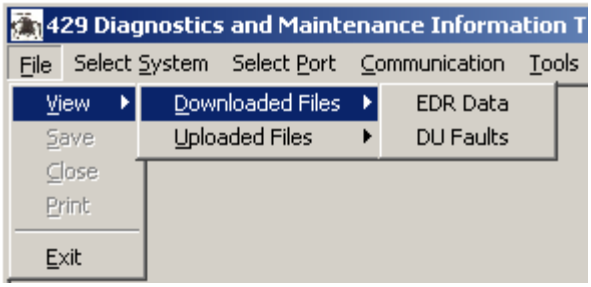
Communication: The **Communication** drop down menu regroups communication functions. This menu option is disabled if an I/O communication task is in progress or if no communication port is selected.

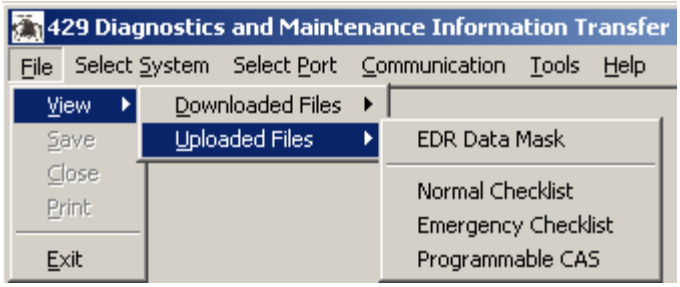
Tools: The **Tools** drop down menu regroups DMITS support tools. This menu option is always enabled.

Help: The **Help** drop down menu regroups menu items related to user support. This menu option is always enabled.

3.1.1 File Menu

The **File** drop down menu regroups menu items related to file operations. Options within this drop down menu are dynamically configured to match the selected system's maintenance functions (DU used in example). The **File** drop down menu contains 4 menu items, **Save**, **Close**, **Print** and **Exit** and may contain the optional **View** horizontal drop down menu depending on the selected system.





Save: Clicking this menu item will open the Save Dialog Box, which lets the user specify the drive, directory, and name of the file to save. This menu option is enabled if data was downloaded from a system download function and is presented in the viewing window (see section 3.3 for viewing window details).

Close: Clicking this menu item will close the viewing window. This menu item is enabled if a data file was opened with the **View** horizontal drop down menu and is presented in the viewing window.

Print: Clicking this menu item will open the Print Dialog Box, which lets the user specify the printer in order to print the data contained in the viewing window. This menu item is enabled if data is presented on the viewing window.

Exit: Clicking this menu item will close the DMITS application. This menu item is always enabled.

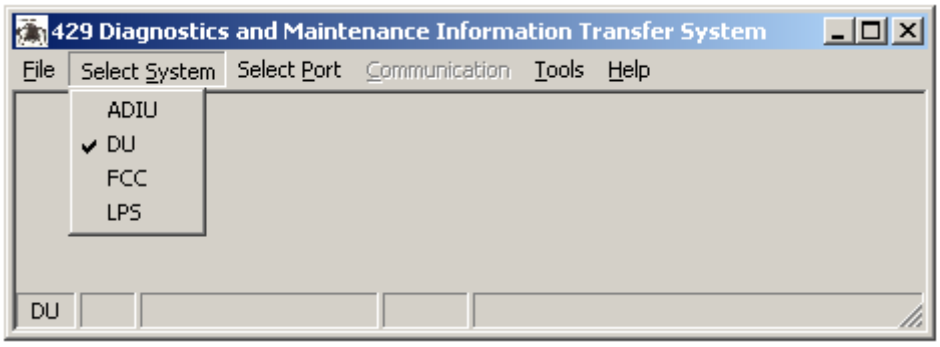
View: This optional horizontal drop down menu regroups menu items for opening and viewing maintenance function files. Options within this horizontal drop down menu are dynamically configured to match the selected system's maintenance functions. Depending on the selected system, the **View** horizontal drop down menu may contains two horizontal drop down menus, **Downloaded Files** and **Uploaded Files**, which regroup the system's maintenance functions menu items.

Downloaded Files: This horizontal drop down menu regroups menu items related to opening and viewing downloaded maintenance functions files. Menu items within this horizontal drop down menu are dynamically configured to match the selected system's download maintenance functions. Clicking one of these menu items lets the user specify the drive, directory, and name of the file to open and display on the viewing window.

Uploaded Files: This horizontal drop down menu regroups menu items related to opening and viewing uploaded maintenance functions files. Menu items within this horizontal drop down menu are dynamically configured to match the selected system's upload functions. Clicking one of these menu items lets the user specify the drive, directory, and name of the file to open and display on the viewing window.

3.1.2 Select System Menu

The **Select System** drop down menu regroups menu items related to system selection. The **Select System** drop down menu contains 4 menu items: **ADIU**, **DU**, **FCC** and **LPS**.



ADIU: Clicking this menu item will set ADIU as the selected system. The View horizontal drop down and the Communication drop down menus will be filled with menu items corresponding to ADIU functions.

DU: Clicking this menu item will set DU as the selected system. The View horizontal drop down and the Communication drop down menus will be filled with menu items corresponding to DU functions.

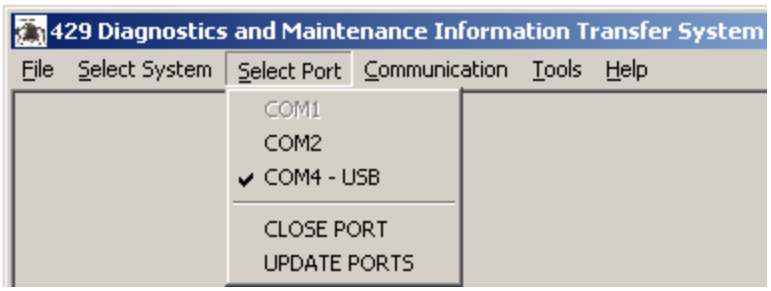
FCC: Clicking this menu item will set FCC as the selected system. The View horizontal drop down and the Communication drop down menus will be filled with menu items corresponding to FCC functions.

LPS: Clicking this menu item will set LPS as the selected system. The View horizontal drop down and the Communication drop down menus will be filled with menu items corresponding to LPS functions.

The selected system, if any, is indicated by a check mark next to the corresponding menu item and is also identified in the first status pane.

3.1.3 Select Port Menu

The **Select Port** drop down menu regroups menu items related to communication setup. The **Select Port** drop down menu contains at least 2 menu items: **Close Port** and **Update Ports**. The actual communication ports on the laptop are determined at runtime and dynamically added to the menu with the **COMX** notation; where X represents the OS defined port number. All communication ports are added to the menu, grayed options represents ports that are already in use by another application, they may not be selected.



COMX: Clicking one of these menu items will open and configure the communication port for data transmission. These menu items are enabled if the communication port is not already in use when the port scan occurred. When the computer is connected to the GSE switch box through a USB cable, the USB communication port appears with the **COMX - USB** notation.

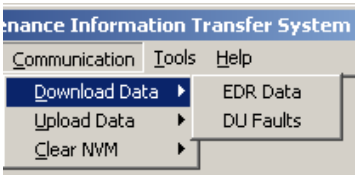
Close Port: Clicking this menu items will close the communication port. This menu item is enabled if a communication port is opened by the application.

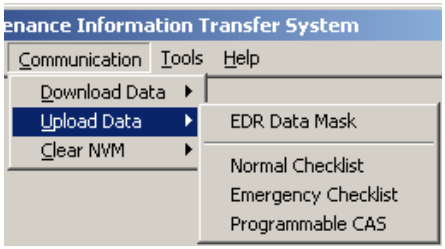
Update Ports: Clicking this menu items does a port scan and refreshes the **Select Port** menu items and their state. This menu item is always enabled.

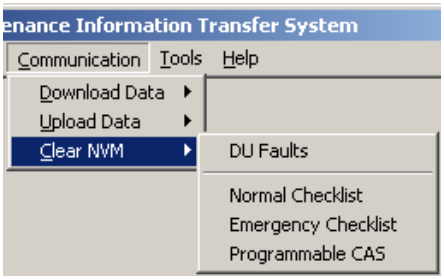
The selected communication port, if any, is indicated by a check mark next to the corresponding menu item and is also identified in the second status pane.

3.1.4 Communication Menu

The **Communication** drop down menu regroups communication functions. Options within this drop down menu are dynamically configured to match the selected system's maintenance functions (DU used in example). The **Communication** drop down menu may contain the **Fuel XFER Override** menu item and may contain up to three optional horizontal drop down menus, **Download Data**, **Upload Data** and **Clear NVM** and may contain the **Fuel XFER Override** menu item.







Download Data: This optional horizontal drop down menu regroups menu items related to download maintenance functions. Menu items within this horizontal drop down menu are dynamically configured to match the selected system's download maintenance functions. Clicking one of these menu items enables the communication download interface.

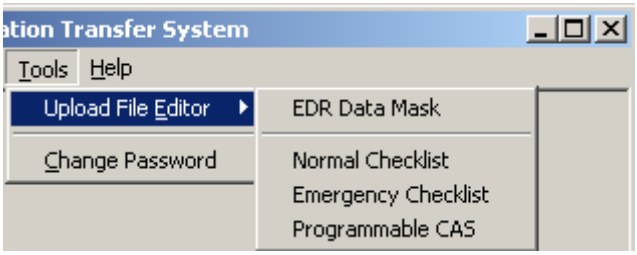
Upload Data: This optional horizontal drop down menu regroups menu items related to upload maintenance functions. Menu items within this horizontal drop down menu are dynamically configured to match the selected system's upload maintenance functions. Clicking one of these menu items enables the communication upload interface.

Clear NVM: This optional horizontal drop down menu regroups menu items related to memory clear functions. Menu items within this horizontal drop down menu are dynamically configured to match the selected system's memory clear maintenance functions. Clicking one of these menu items lets the user send memory clear commands to the selected system.

Fuel XFER Override: This optional menu item is only part of the ADIU maintenance functions. Clicking this menu items will open the Fuel XFER Override Interface and let the user send override commands to the aft/fore transfer pump.

3.1.5 Tools Menu

The **Tools** drop down menu regroups DMITS support tools. Options within this drop down menu are dynamically configured to match the selected system's maintenance functions (DU used in example). The **Tools** drop down contains 1 menu items, **Change Password** and may contain the optional **Upload File Editor** horizontal drop down menu depending on the selected system.

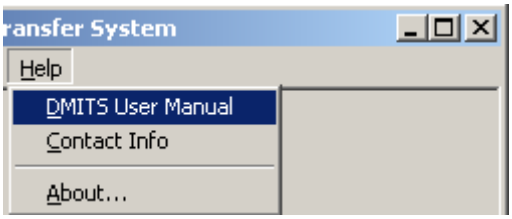


Change Password: Clicking this menu items will open the change password dialog Box. This menu item is always enabled.

Upload File Editor: This optional horizontal drop down menu regroups menu items related to upload functions file creation. Menu items within this horizontal drop down menu are dynamically configured to match the selected system's upload maintenance functions. Clicking one of these menu items opens an editor dialog box that lets the user create uploadable files in the correct format.

3.1.6 Help Menu

The **Help** drop down menu regroups menu items related to user support. The **Help** drop down menu contains 3 menu items: **DMITS User Manual, Contact Info** and **About...**



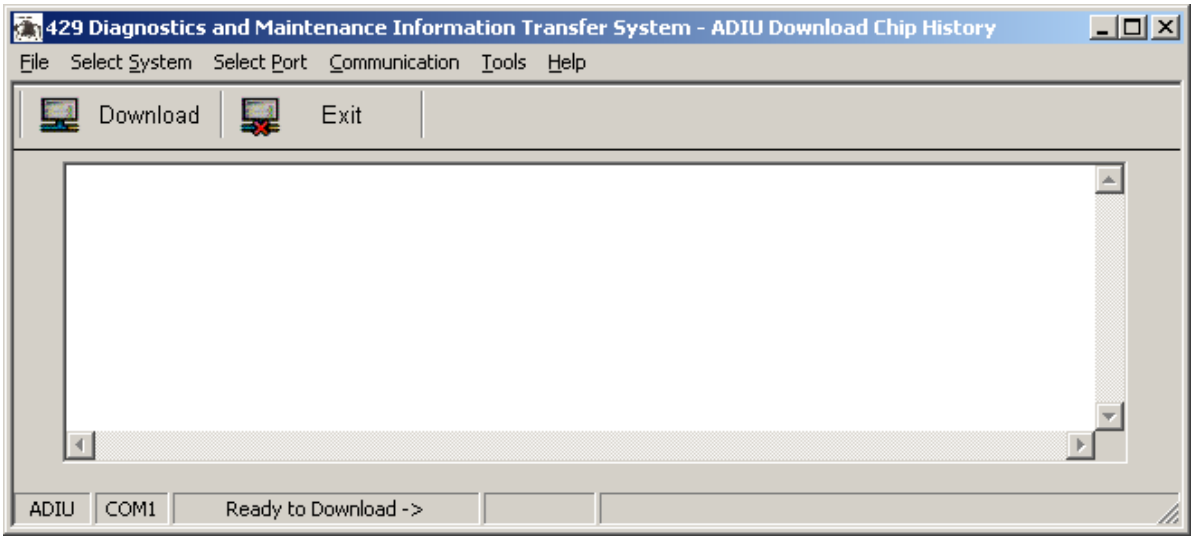
DMITS User Manual: Clicking this menu items will open the DMITS User Manual. This menu item is always enabled.

Contact Info: Clicking this menu items will open the Contact Information dialog box containing support point of contact. This menu item is always enabled.

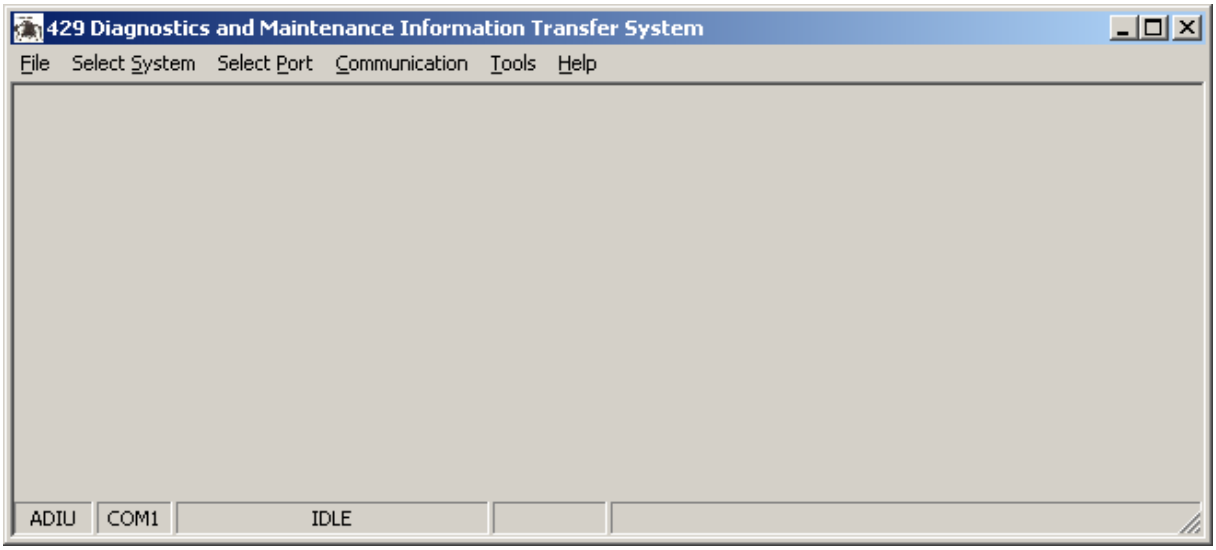
About...: Clicking this menu items will open the About dialog box containing software version information and P/N. This menu item is always enabled.

3.2 MAIN WINDOW CAPTION

The selected system's maintenance function (ADIU Download Chip History in this example) is displayed in the main windows caption area when a maintenance function is selected. Additional information is displayed in the status bar located in the bottom portion of the main window; see section 3.4 for status bar details.

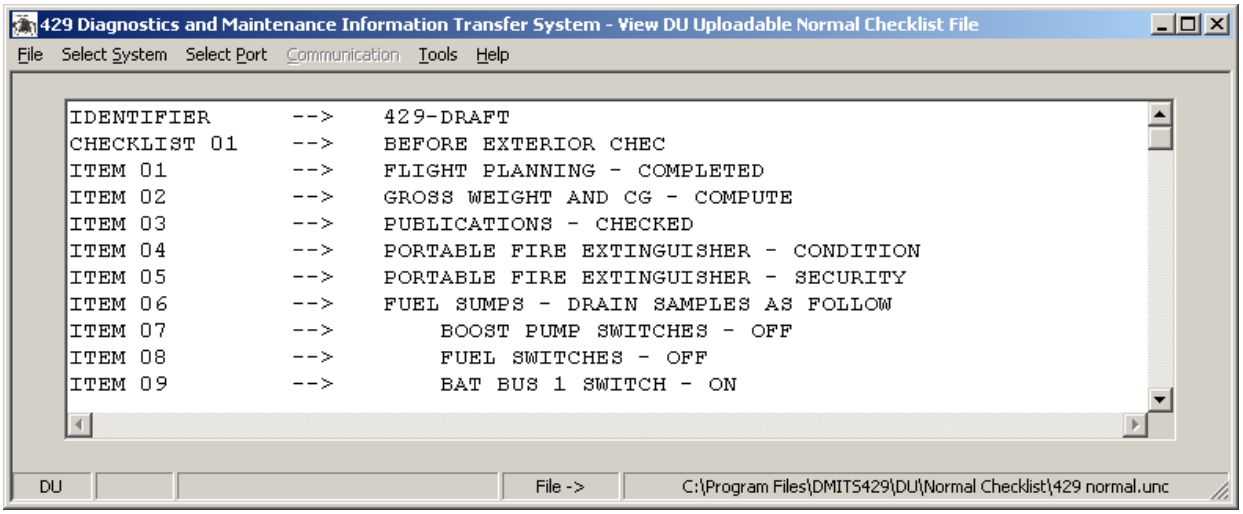


The main windows caption area will display the default caption when no maintenance function is selected.



3.3 VIEWING WINDOW

The viewing window is a multipurpose display window. It is displayed in the center of the application window when required.



The viewing window is displayed in the following cases:

- File data opened from one of the **View** menu items (except for *.cvs files) is displayed.
- File data prior to using a system's upload function is displayed.
- Downloaded data from a system's download function is displayed.

When displayed, the viewing window will be closed by the following actions:

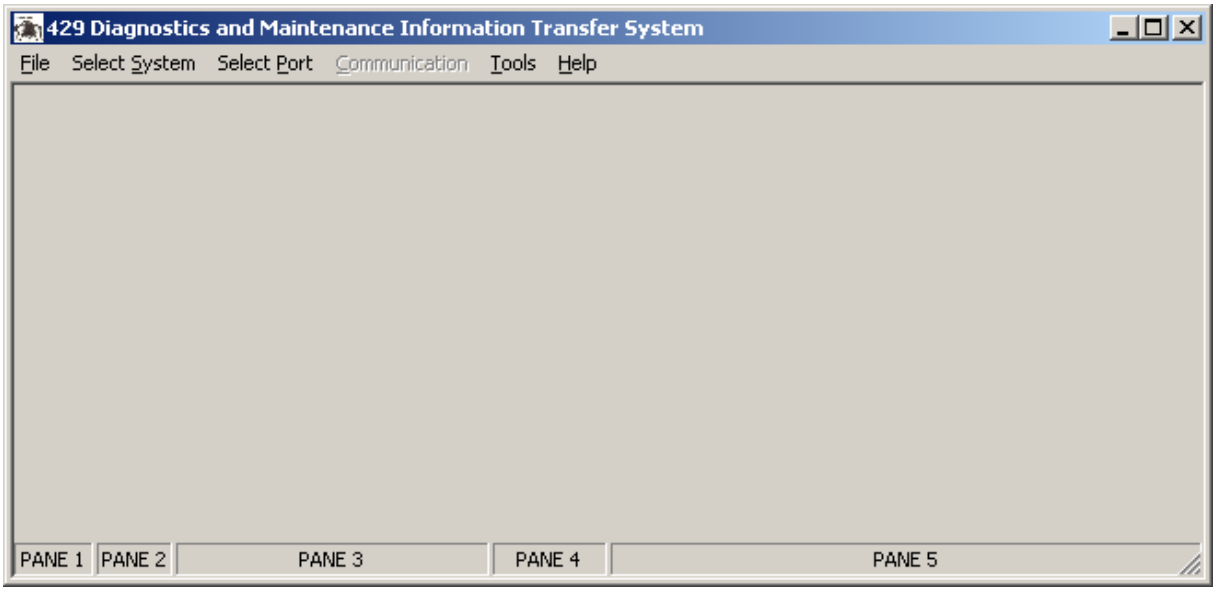
- The **File->Close** menu item is selected while viewing a maintenance data file.
- The toolbar's **Exit** button is pressed while in a communication maintenance function.
- The selected system is changed through the **Select System** drop down menu
- The communication port is close through the **Select Port** drop down menu while in a communication maintenance function.

The viewing window has both horizontal and vertical scroll bars. The scroll bars will appear only if the text extends past the window's current size. In the example above, the vertical scrollbar is displayed and may be used to scroll down the text displayed in the viewing window.

Text may not be typed in the viewing window, but text may be copied from it using typical copy techniques.

3.4 STATUS BAR

The status bar window occupies the bottom portion of the screen; it contains status information relevant to the application.



The status bar window is separated into 5 panes.

PANE 1: This pane is used to display the selected system. Right-clicking on this pane brings up a track menu that allows the user to change the selected system.

PANE 2: This pane is used to display the configured communication port.

PANE 3: This pane is used to display the state of the configured communication port. This pane is also used following a communication function to display the status messages received from the system under maintenance.

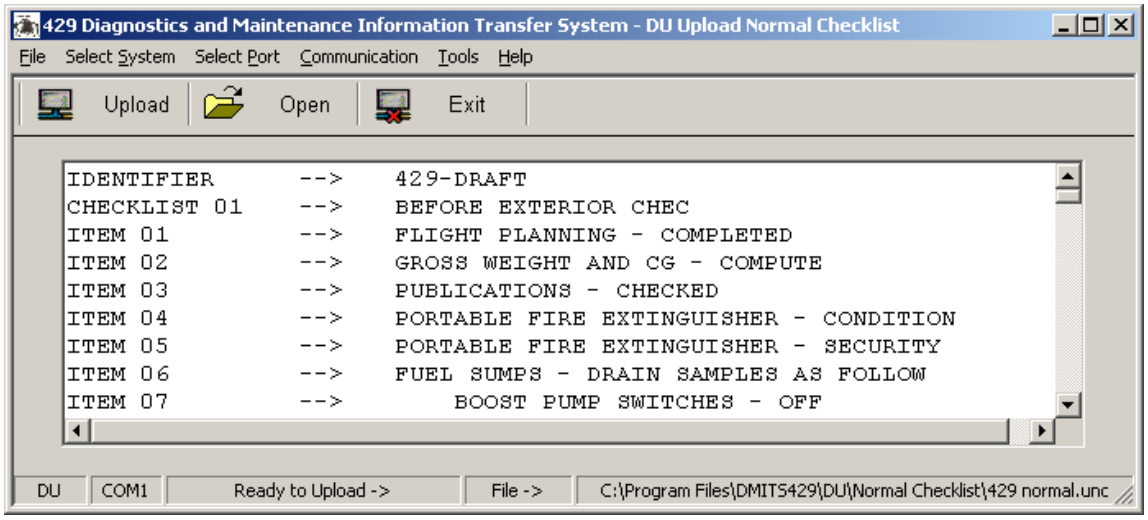
PANE 4: This pane is used to display header information for the fifth pane.

PANE 5: This pane is used to display the filename, if any, of the file displayed in the viewing window. This pane is also used to show a progress bar for lengthy maintenance communication functions.

The progress bar is displayed for the following maintenance functions: DU Download EDR Data, DU Upload Normal Checklist, DU Upload Emergency Checklist, ADIU Upload Aircraft Data, LPS Download Dimming Table and LPS Download All Dimming Tables.

The following examples illustrate the pane usage for the DU Upload Normal Checklist function. Example #1 illustrates the pane usage prior to upload, Example #2 illustrates the pane usage during the upload and Example #3 illustrates the pane usage after the upload.

Example #1 - Prior to Upload



PANE 1: Displays the current sub-system (DU).

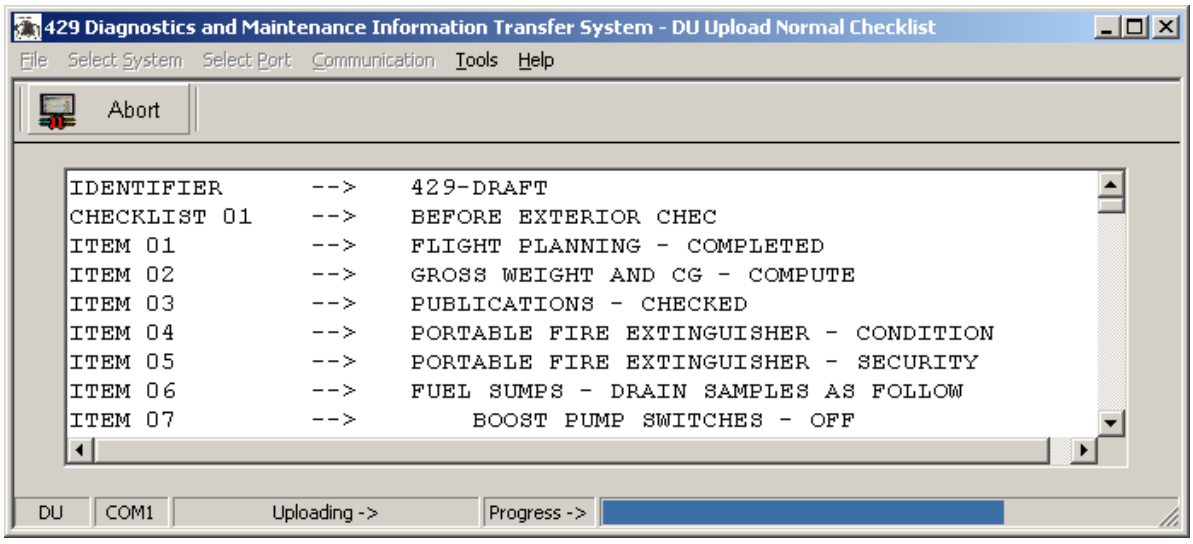
PANE 2: Displays the configured communication port (COM1).

PANE 3: Displays the state of the communication port (Ready to Upload ->).

PANE 4: Displays header information for PANE 5 (File ->).

PANE 5: Displays the normal checklist filename to upload (C:\Program Files\DMITS429\DU\Normal Checklist\429 normal.unc).

Example #2 - During Upload



PANE 1: Information is unchanged.

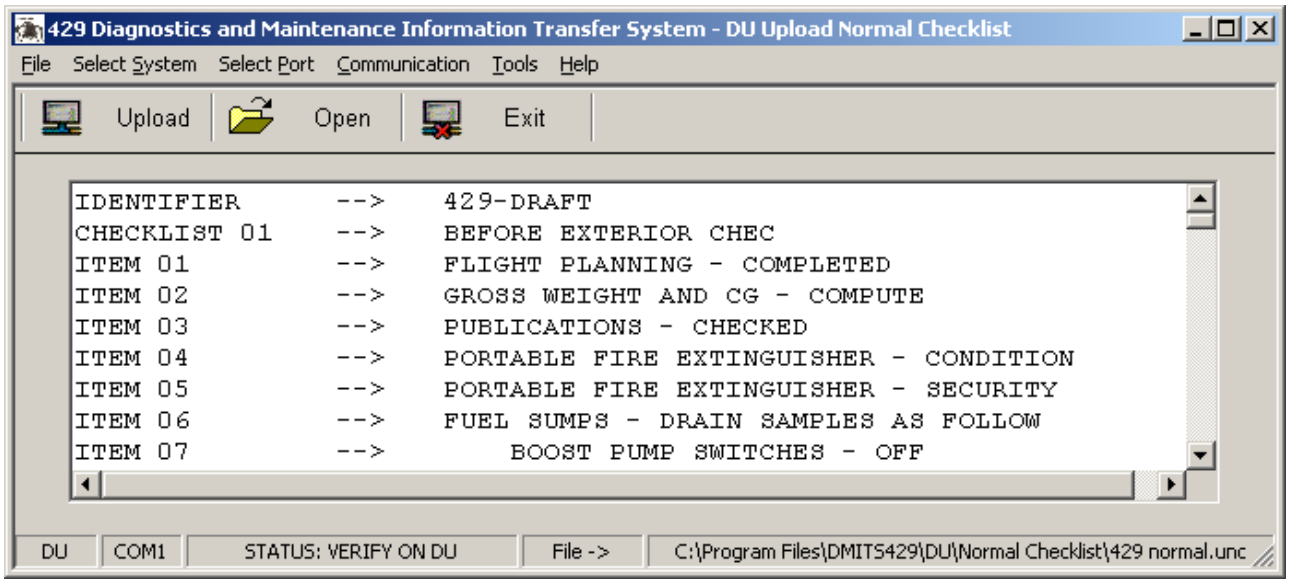
PANE 2: Information is unchanged.

PANE 3: Displays the state of the communication port (Uploading ->).

PANE 4: Displays header information for Pane 5 (Progress ->).

PANE 5: Displays a progress bar for the upload.

Example #3- After Upload



PANE 1: Information is unchanged.

PANE 2: Information is unchanged.

PANE 3: Displays the status messages[1] received from the system under maintenance.

PANE 4: Displays header information for Pane 5 (File ->).

PANE 5: Displays the uploaded normal checklist filename (C:\Program Files\DMITS429\DU\Normal Checklist\429 normal.unc).

The status bar window contains a size grip icon to the right of the fifth pane. The size grip is used to resize the application's window.

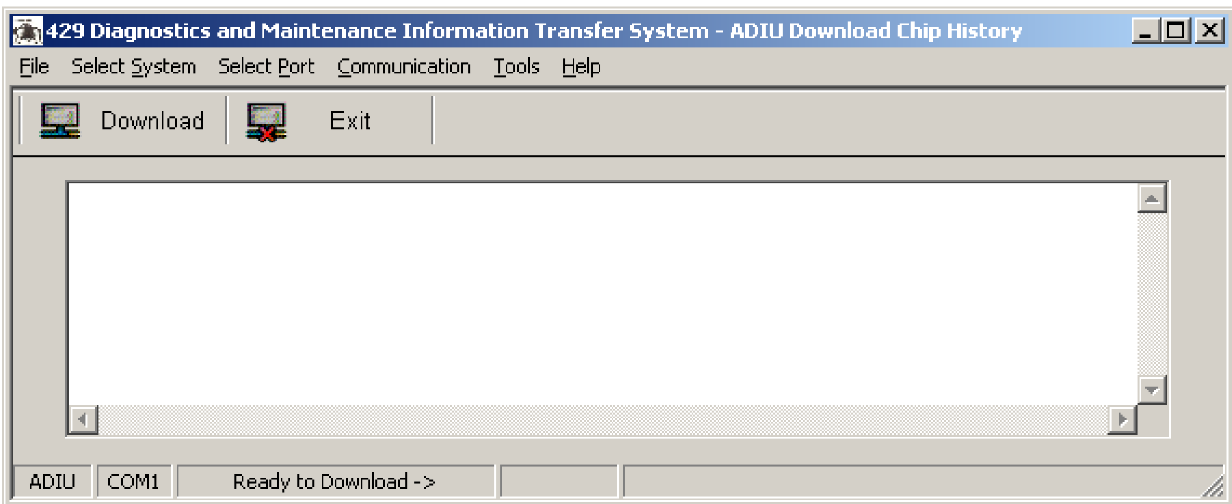
[1] In the case of a DU, status messages are displayed in the gray bordered box on the DU Maintenance page.

3.5 TOOLBAR

3.5.1 Download

The download toolbar window is displayed when a download maintenance function is selected. The toolbar window is dynamically updated to show only appropriate buttons for the given situation and may contain up to 3 buttons:

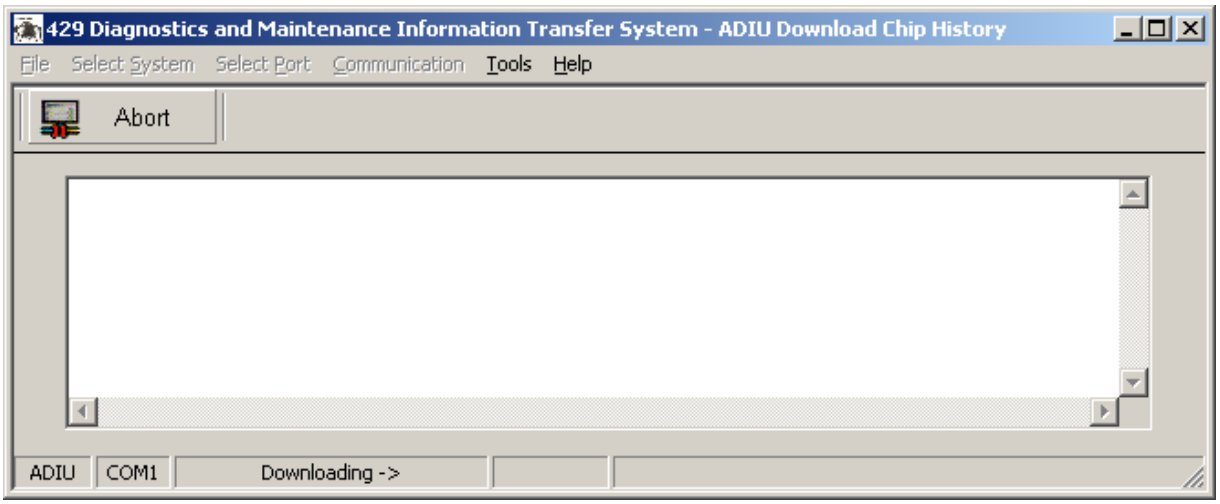
Example #1 - Prior to Download



Download: The Download button is displayed when communication is in idle or ready state. Clicking the button will launch the download process.

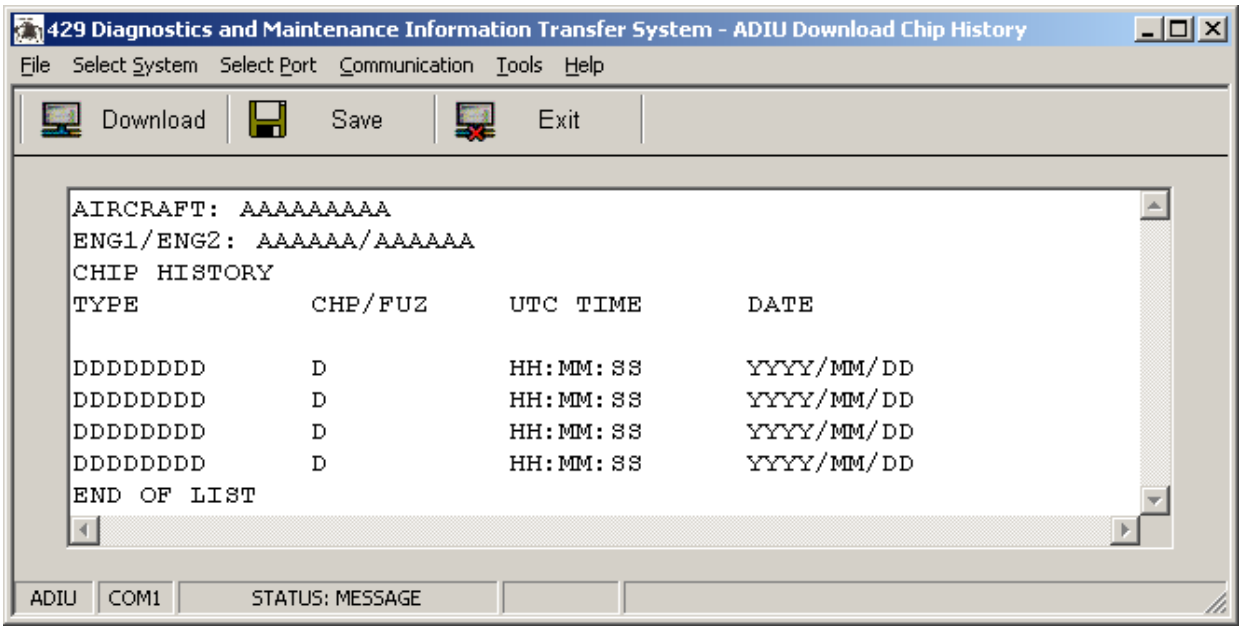
Exit: The Exit button is displayed when communication is in idle or ready state. Pressing the button will exit the download maintenance function.

Example #2 – Downloading



Abort: The Abort button is displayed when a download process is underway. Clicking this button will terminate the software download process.

Example #3 – Download Complete

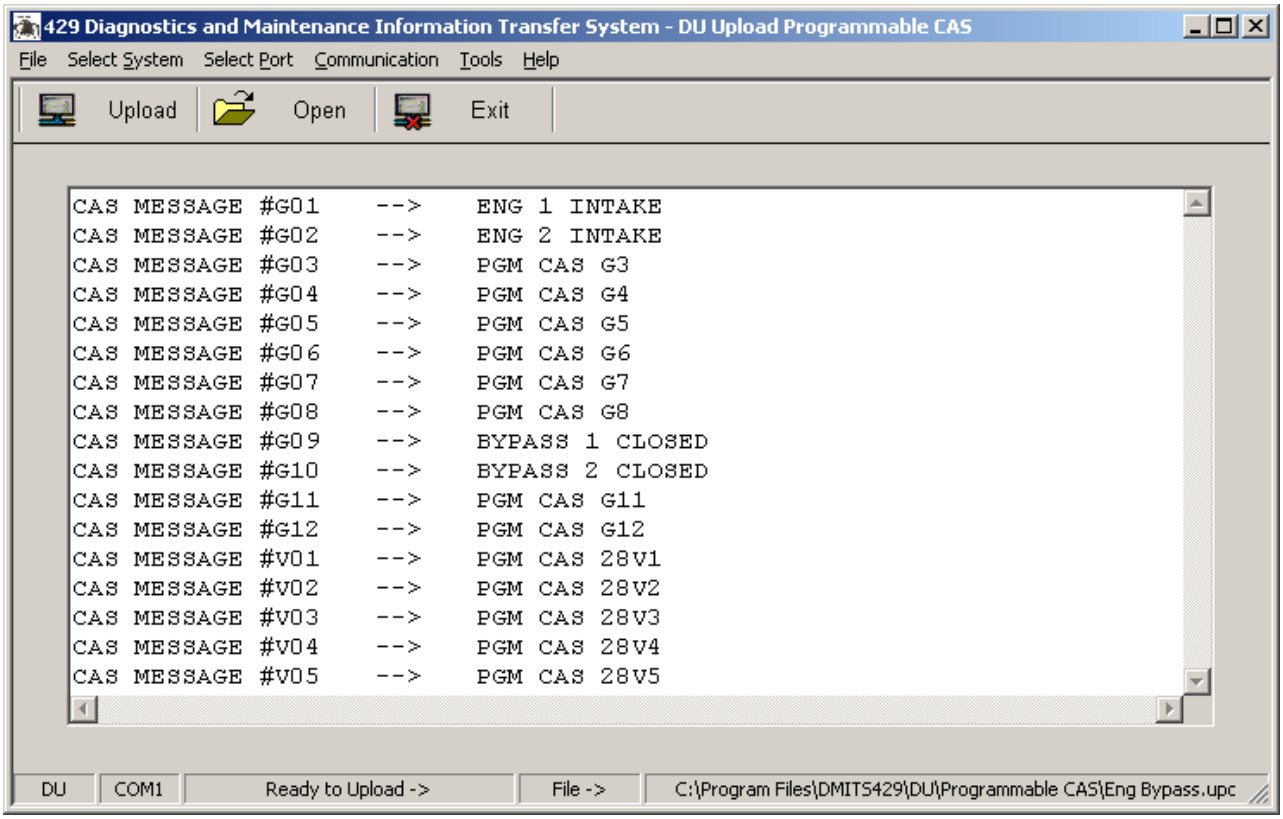


Save: The Save button is displayed after a successful download operation, when communication returns to the idle or ready state. Clicking this button will open the Save Dialog Box, which lets the user specify the drive, directory, and name of the file to save.

3.5.2 Upload

The upload toolbar window is displayed when an upload maintenance function is selected. The toolbar window is dynamically updated to show only appropriate buttons for the given situation and may contain up to 3 buttons:

Example #1 – Prior to Upload

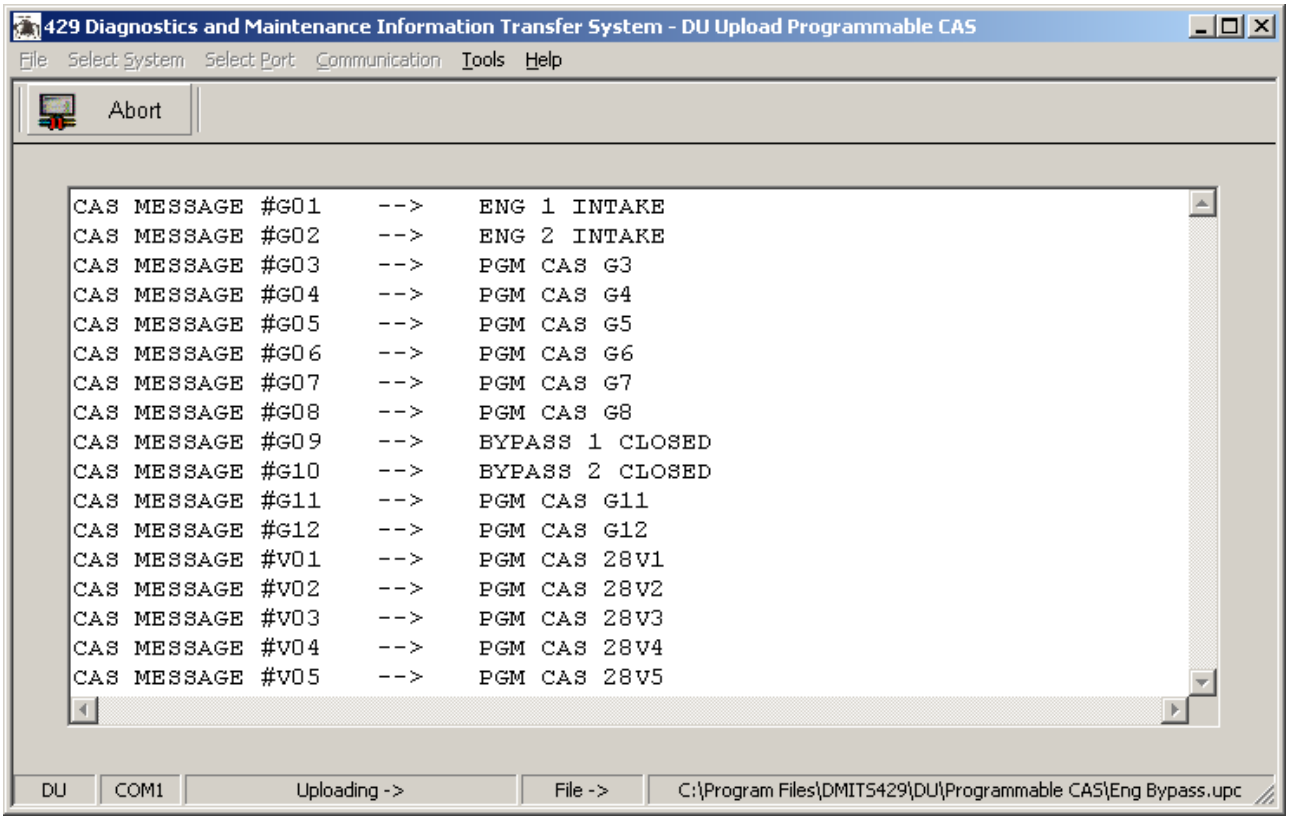


Upload: The Upload button is displayed when communication is in idle or ready state. Clicking the button will launch the appropriate upload process.

Open: The Open button is displayed when an upload maintenance function is selected. Clicking this button will open the Open Dialog Box, which lets the user specify the drive, directory, and name of the file to upload.

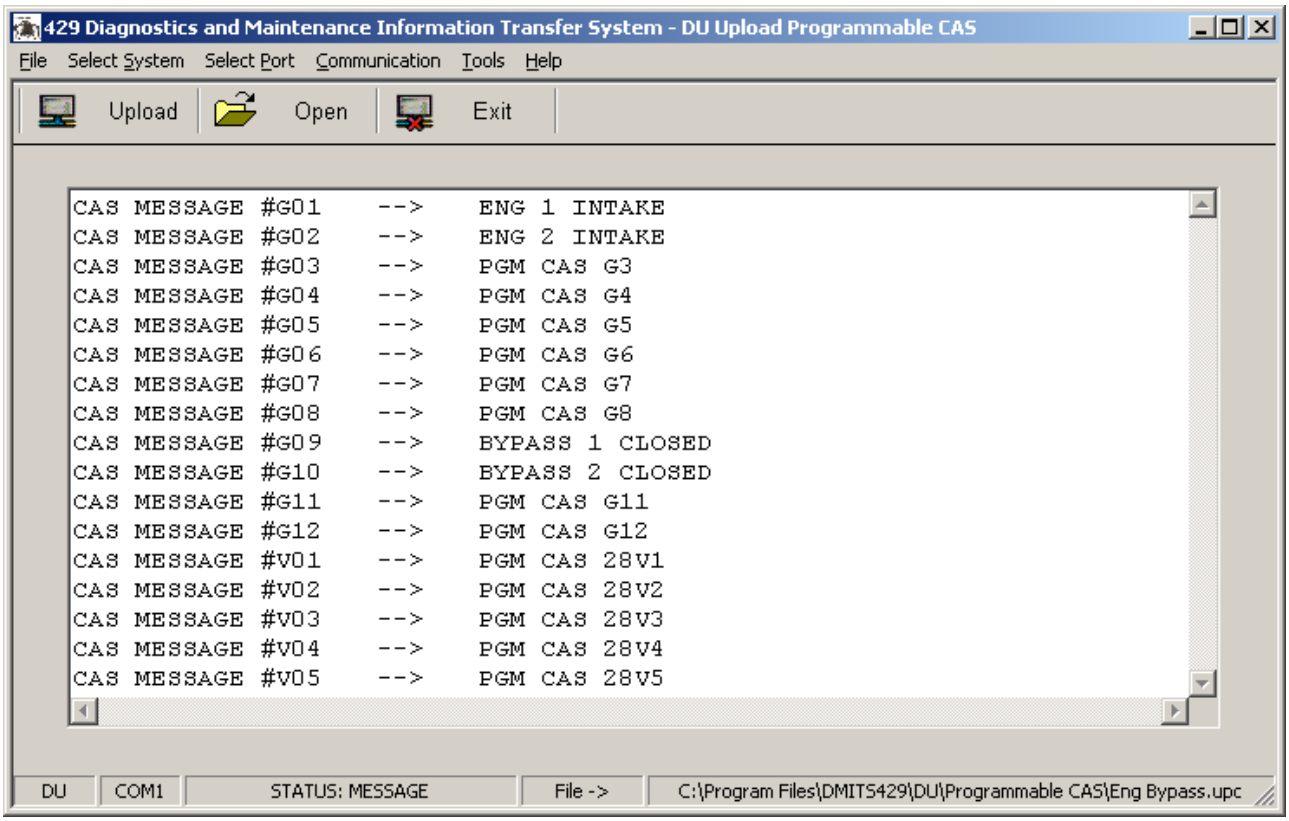
Exit: The Exit button is displayed when communication is in idle or ready state. Pressing the button will exit the upload maintenance function.

Example #2 – Uploading



Abort: The Abort button is displayed when an upload process is underway. Clicking this button will terminate the upload process.

Example #3 – Upload Complete



3.6 EDITORS

The DMITS file editors are dialog boxes used to create valid and formatted uploadable data files. File editors are available for the following maintenance functions: DU EDR Data Mask, DU Normal Checklist, DU Emergency Checklist, DU Programmable CAS, ADIU Aircraft Data and LPS Dimming Table.

File editors share a common toolbar structure:

New: The **New** button is used to reset the editable fields to a blank state.

Open: The **Open** button is used to open a file and fill the forms editable fields.

Save: The **Save** button is used to save an already existing file.

Save As: The **Save As** button is used to save under a new filename.

Exit: The **Exit** button is used to close the editor dialog box.

Tooltip: The **Tooltip** button is used to toggle ON or OFF the display of the tooltips.

Tooltips are displayed when the mouse is hovered over the editor's controls: toolbar buttons, status bar panes and editable fields. Tooltips will display useful information related to the each control. Tooltips are displayed as yellow bulleted text per the example above (mouse hovered over the Exit button).
To ensure the files are properly formatted to upload, before saving the file the editors will typically ensure that:

- Characters used are part of the valid character set
- Maximum length of each editable field is respected
- All required editable fields are completed

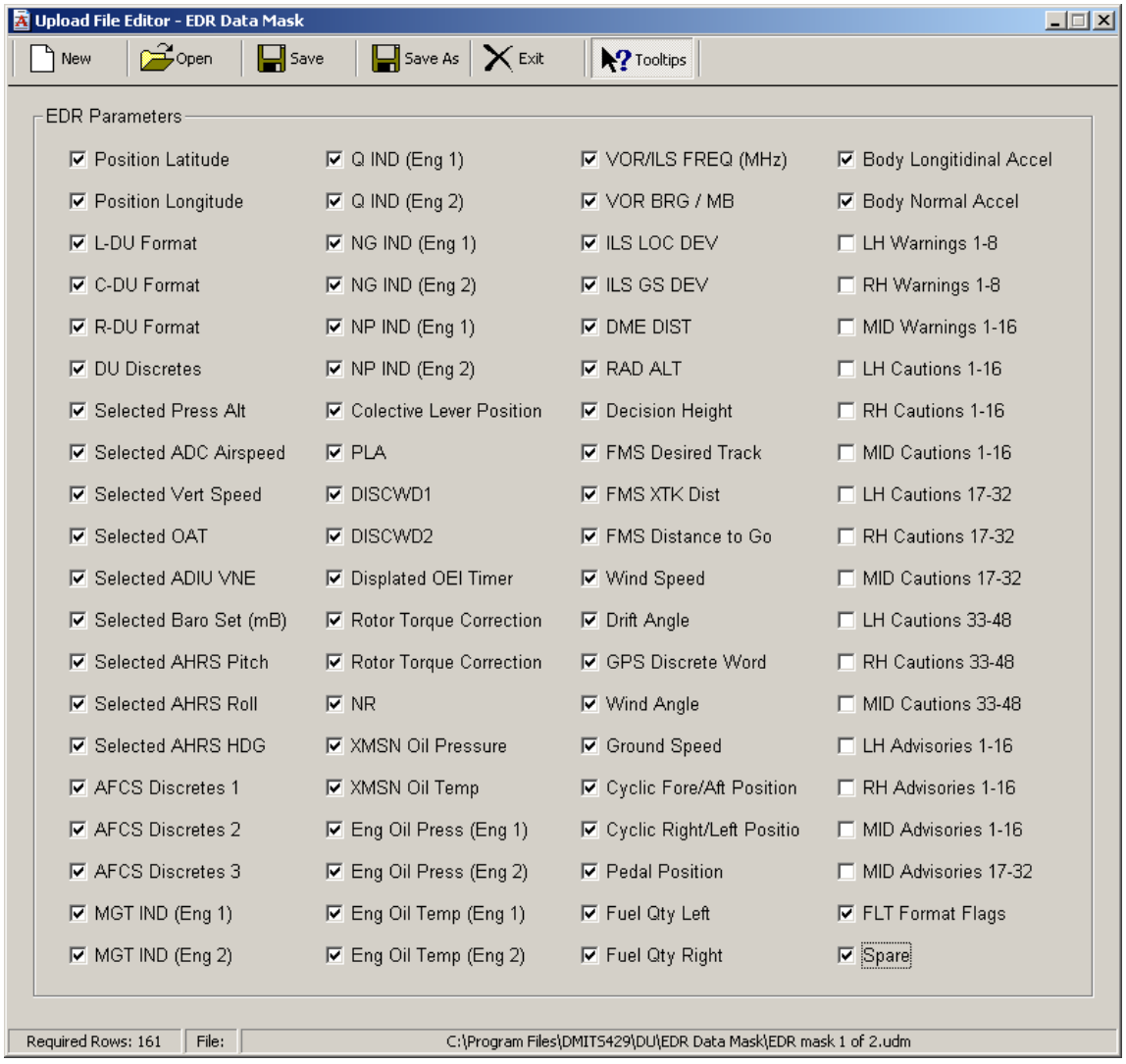
When one of these criteria is not met, a message box will display the nature of the problem and suggest possible solutions.

Note:

Use of the editors is mandatory for creating uploadable files. Files created outside the editors will not be recognized as valid by the various upload functions.

3.6.1 DU EDR Data Mask

The EDR Data Mask editor dialog box may be opened by setting the current system to DU (**Select System->DU**) and selecting the **Tools->Upload File Editor->EDR Data Mask** menu item. The following figure illustrates the editor with the EDR mask 1 of 2.udm file opened.



To create an EDR Data Mask file, check the desired parameters checkboxes, then save to file.

The EDR Data Mask is uploaded to the DU to indicate what parameters are required to be downloaded as part of a subsequent call to the EDR Data download function. If an all-zero parameter mask is uploaded, the DU shall default to a parameter mask with only parameters 1 and 2 selected (lat/long). The downloaded binary data is translated to text to represent the parameters value and saved in a comma separated value (CSV) file. The first status pane of the editor is used to display the number of rows required in this EDR Data downloaded file using the editor's current mask.

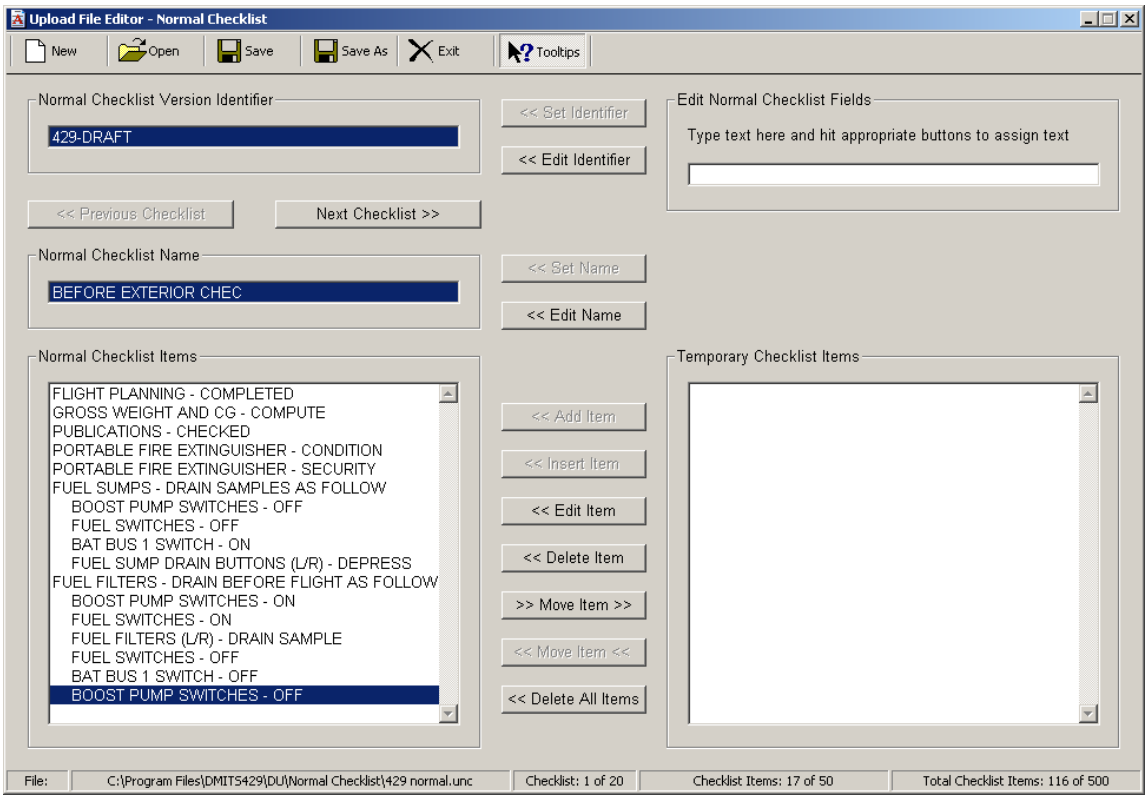
Note:

> CSV Files are opened with the microsoft excel application. excel versions prior to version 12 have an intrinsic 256 row limit; any data beyond row 256 is clipped. for users of excel prior to version 12, it is recommended to create an EDR data mask that will require 256 rows or less. two EDR data mask files are installed with the application respecting this limitation: EDR mask 1 of 2.UDM (all parameters except the CAS words) and EDR mask 2 of 2 (cas).UDM (all the cas words).

The third status pane is used to display the current EDR Data Mask filename. An [*] before the filename indicates file has been changed since last saved.

3.6.2 DU Normal Checklist

The Normal Checklist editor dialog box may be opened by setting the current system to DU (**Select System->DU**), selecting the **Tools->Upload File Editor->Normal Checklist** menu item and then entering the DMITS password in the password caption dialog box. The following figure illustrates the editor with the 429 normal.unc file opened.



Creation of a Normal Checklist file is done via the **Edit Normal Checklist Fields** window and the various control buttons. The following table explains the use of each control:

Control	Details
Edit Normal Checklist Fields	This field is used to type the text that will be assigned to other fields on the form (named Edit herein).
Set Identifier	Button used to transfer the text contained in the Edit field to the Normal Checklist Version Identifier field. Button is enabled if the Edit field is not blank.
Edit Identifier	Button used to transfer the text contained in the **Normal Checklist Version Identifier** to the **Edit** field. Button is enabled if the **Normal Checklist Version Identifier** field is not blank.
Normal Checklist Version Identifier	This field holds the normal checklist version identifier saved to file. Double clicking this field as the same effect as using the **Edit Identifier** button. The version identifier is limited to 10 characters.

Set Name	Button used to transfer the text contained in the **Edit** field to the **Normal Checklist Name** field. Button is enabled if the **Edit** field is not blank.
Edit Name	Button used to transfer the text contained in the **Normal Checklist Name** to the **Edit** field. Button is enabled if the **Normal Checklist Name** field is not blank.
Normal Checklist Name	This field holds the normal checklist name saved to file for the current checklist. Double clicking this field as the same effect as using the **Edit Name** button. Checklist names are limited to 10 characters.
Add Item	Button used to transfer the text contained in the **Edit** field to the end of the **Normal Checklist Items** field. Button is enabled if the **Edit** field is not blank.
Insert Item	Button used to transfer the text contained in the **Edit** field to the highlighted position of the **Normal Checklist Items** field. Button is enabled if the **Edit** field is not blank.
Edit Item	Button used to transfer the text contained in the highlighted position of the **Normal Checklist Items** field to the **Edit** field. Button is enabled if the **Normal Checklist Items** field is not empty.
Delete Item	Button used to delete the text contained in the highlighted position of the **Normal Checklist Items** field. Button is enabled if the **Normal Checklist Items** field is not empty.
>> Move Item >>	Button used to transfer the text contained in the highlighted position of the **Normal Checklist Items** field to the highlighted position of the **Temporary Checklist Items** field. Button is enabled if the **Normal Checklist Items** field is not empty.
<< Move Item <<	Button used to transfer the text contained in the highlighted position of the **Temporary Checklist Items** field to the highlighted position of the **Normal Checklist Items** field. Button is enabled if the **Temporary Checklist Items** field is not empty.
<< Delete All Items	Button used to delete all the text contained in the in the **Normal Checklist Items** field. Button is enabled if the **Normal Checklist Items** field is not empty.

Normal Checklist Items	This field holds the normal checklist items saved to file for the current checklist. Double clicking an item in this field as the same effect as using the **Edit Item** button when the item is highlighted. Checklist items are limited to 46 characters.
Temporary Checklist Items	This field holds temporary normal checklist item, they are not saved to file.
<< Previous Checklist	Button used to move and display information of the previous checklist (name & items). Button is enabled if currently displayed checklist is 2 or above.
Next Checklist >>	Button used to move and display information of the next checklist (name & items). Button is enabled if the **Normal Checklist Name** field is not empty

The valid character set for checklist identifier, checklist names and checklist items is as follow: "-"(minus or dash), “+”(plus), "."(period), “,”(comma), “/”(slash), “%”(percent), “(“(open bracket), “)”(close bracket), “ “(space), “>”(greater than), “<”(less than), “=”(equal), "0 thru 9" or "A thru Z". A beep sound will be heard when the user tries to enter an invalid character.

The status bar panes usage is as follow:

The second status pane is used to display the current normal checklist file name. An [*] before the file name indicates file has been changed since last saved.

The third status pane indicates the current checklist displayed on the form. A normal checklist file may contain up to 20 checklists.

The forth status pane indicates the current checklist’s item count. A checklist may contain up to 50 checklist items.

The fifth pane indicates the item count contained in all checklists. .A normal checklist file may contain up to a combined total of 500 checklist items for all the checklists.

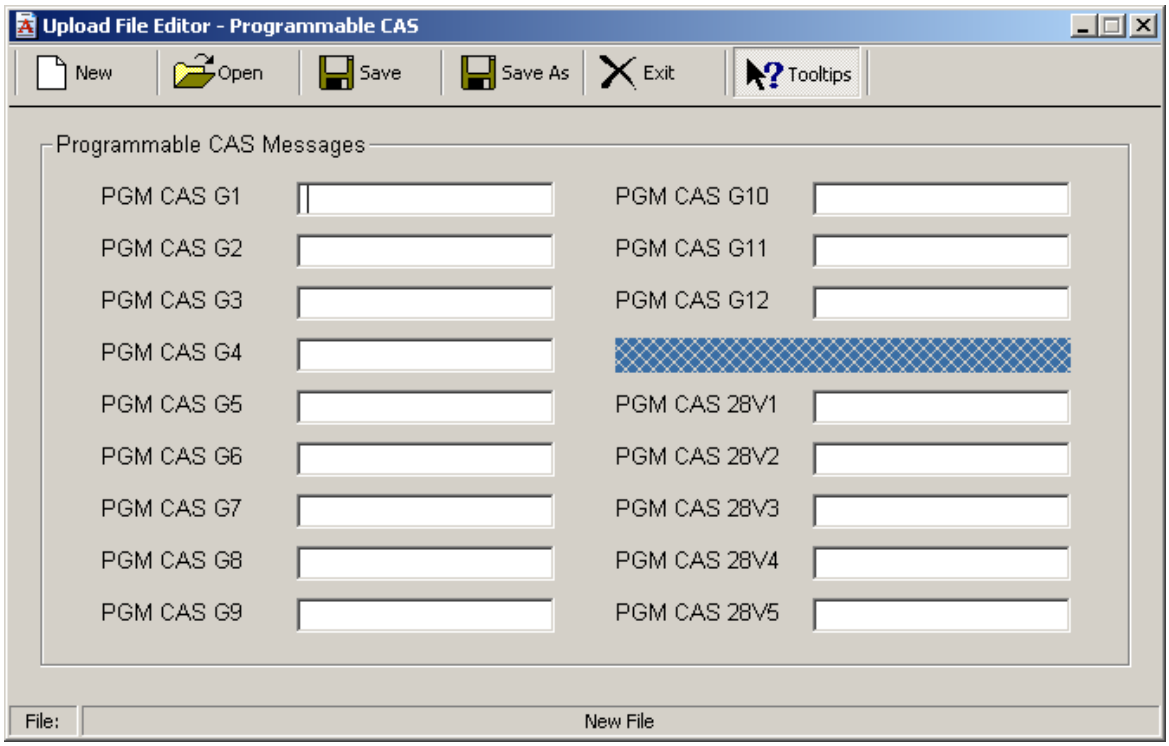
3.6.3 DU Emergency Checklist

The Emergency Checklist editor dialog box may be opened by setting the current system to DU (**Select System->DU**), selecting the **Tools->Upload File Editor->Emergency Checklist** menu item and then entering the DMITS password in the password caption dialog box.

Functionality of the Emergency Checklist editor is identical to that of the Normal Checklist editor defined in section 3.6.2.

3.6.4 DU Programmable CAS

The Programmable CAS editor dialog box may be opened by setting the current system to DU (**Select System->DU**), selecting the **Tools->Upload File Editor->Programmable CAS** menu item and then entering the DMITS password in the password caption dialog box. The following figure illustrates the editor (without any opened file).



To create a Programmable CAS file, type the desired CAS messages in the appropriate fields, then save to file. If some fields are left blank when saving the file, the following message will appear.

Default CAS messages are defined as follow: **PGM CAS Gx** (where **x** is the ground/open CAS message number) and **PGM CAS 28Vx** (where **x** is the 28V/open CAS message number).

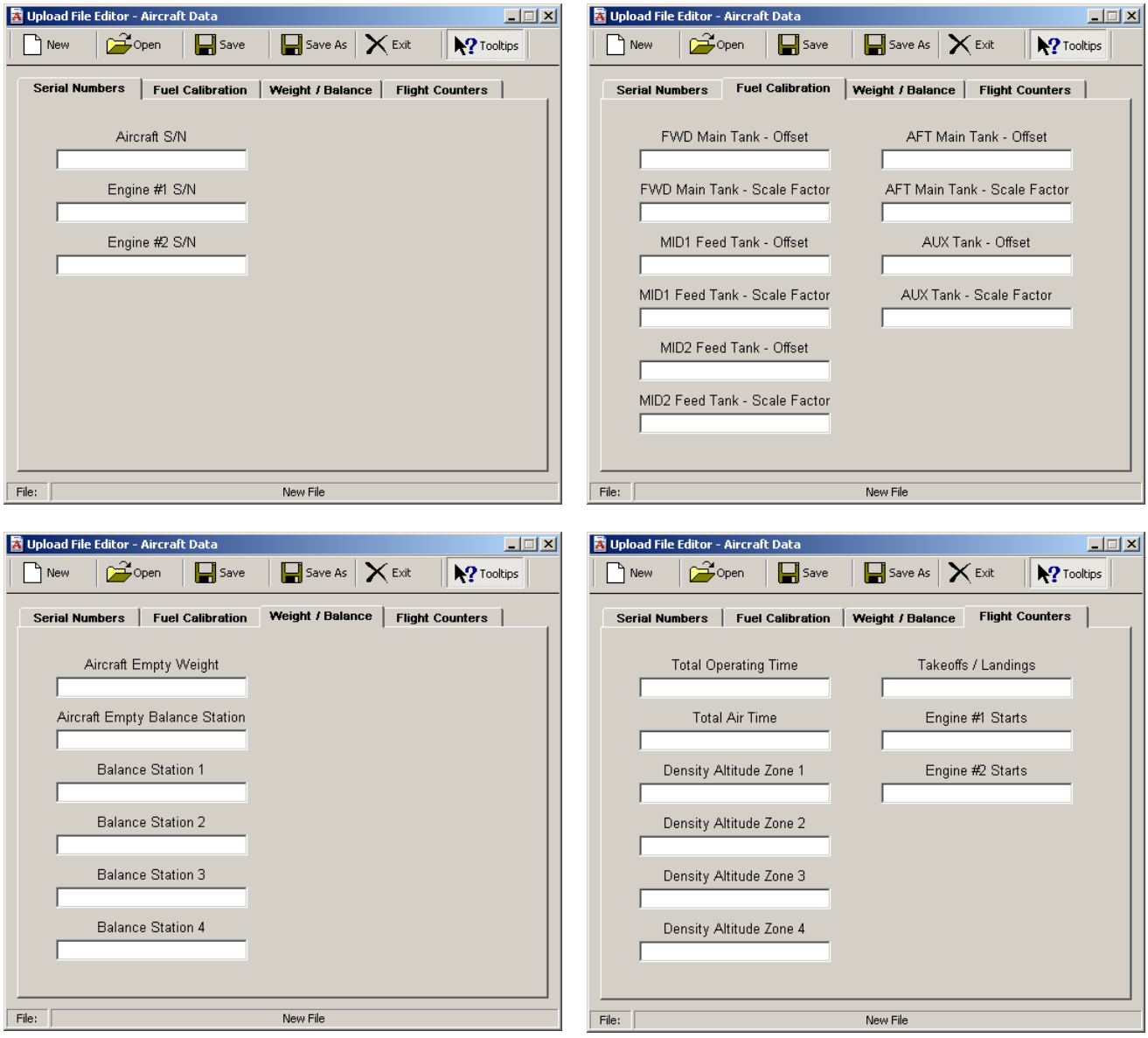
Programmable CAS messages are limited to 15 characters and the valid character set is as follow: "-"(minus or dash), “+”(plus), "."(period), “,”(comma), “/”(slash), “%”(percent), “(“(open bracket), “)”(close bracket), “ “(space), “>”(greater than), “<”(less than), “=”(equal), "0 thru 9" or "A thru Z". A beep sound will be heard when the user tries to enter an invalid character.

CAUTION:

Care should be taken when creating and uploading a programmable CAS data file. Ensure any previous programmable CAS messages (previously uploaded to the display units) are repeated in the appropriate fields while adding a CAS messages to a data file. Failure to do so will result in overwriting previous programmable CAS messages with the default values when the file is uploaded to the display units.

3.6.5 ADIU Aircraft Data

The Aircraft Data editor dialog box may be opened by setting the current system to ADIU (**Select System->ADIU**) and selecting the **Tools->Upload File Editor->Aircraft Data** menu item. The following figure illustrates the editor's different tab pages (without any opened file).



Clicking on the appropriate tab page header will navigate the different tab pages. To create Aircraft Data file, type all the required information in the appropriate fields, then save to file.

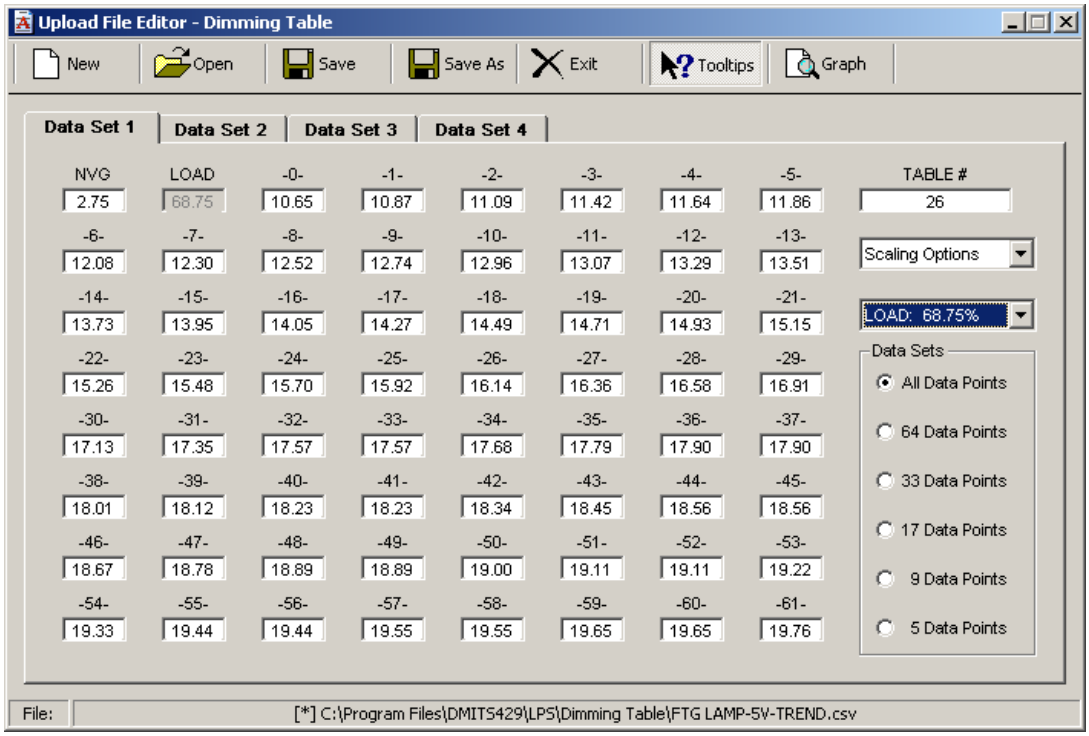
The table blow indicates valid ranges for the different parameters.

Parameter	Parameter Validity Range
Aircraft S/N	9 characters max
Engine #1 S/N	6 characters max
Engine #2 S/N	6 characters max
FWD Main Tank - Offset	-50 to 50
FWD Main Tank - Scale Factor	0.008 to 1.200
MID1 Feed Tank - Offset	-50 to 50
MID1 Feed Tank - Scale Factor	0.008 to 1.200
MID2 Feed Tank - Offset	-50 to 50
MID2 Feed Tank - Scale Factor	0.008 to 1.200
AFT Main Tank - Offset	-50 to 50
AFT Main Tank - Scale Factor	0.008 to 1.200
AUX Tank - Offset	-50 to 50
AUX Tank - Scale Factor	0.008 to 1.200
Aircraft Empty Weight	4000 to 5000
Aircraft Empty Balance Station	-150.0 to 350.0
Balance Station 1	-150.0 to 350.0
Balance Station 2	-150.0 to 350.0
Balance Station 3	-150.0 to 350.0
Balance Station 4	-150.0 to 350.0
Total Operating Time	0.00 to 9999.99
Total Air Time	0.00 to 9999.99
Density Altitude Zone 1	0.00 to 9999.99
Density Altitude Zone 2	0.00 to 9999.99
Density Altitude Zone 3	0.00 to 9999.99
Density Altitude Zone 4	0.00 to 9999.99
Takeoffs / Landings	0 to 9999
Engine #1 Starts	0 to 9999
Engine #2 Starts	0 to 9999

Serial numbers valid character set is as follow: "-"(minus or dash), “+”(plus), "."(period), “,”(comma), “/”(slash), “%”(percent), “(“(open bracket), “)”(close bracket), “ “(space), “>”(greater than), “<”(less than), “=”(equal), "0 thru 9" or "A thru Z". A beep sound will be heard when the user tries to enter an invalid character.

3.6.6 LPS Dimming Table

The LPS Dimming Table editor dialog box may be opened by setting the current system to LPS (**Select System->LPS**) and selecting the **Tools->Upload File Editor->Dimming Table** menu item. The following figure illustrates the editor with the FTG LAMP-5V-TREND.csv file opened.



Four tab pages are used to display all (254) possible dimming potentiometer positions (indicated by the -#- symbols). Clicking on the appropriate tab page header will navigate the different tab pages. An output voltage is assigned to each potentiometer position; omission of one value will be equivalent to entering a value of 0.0.

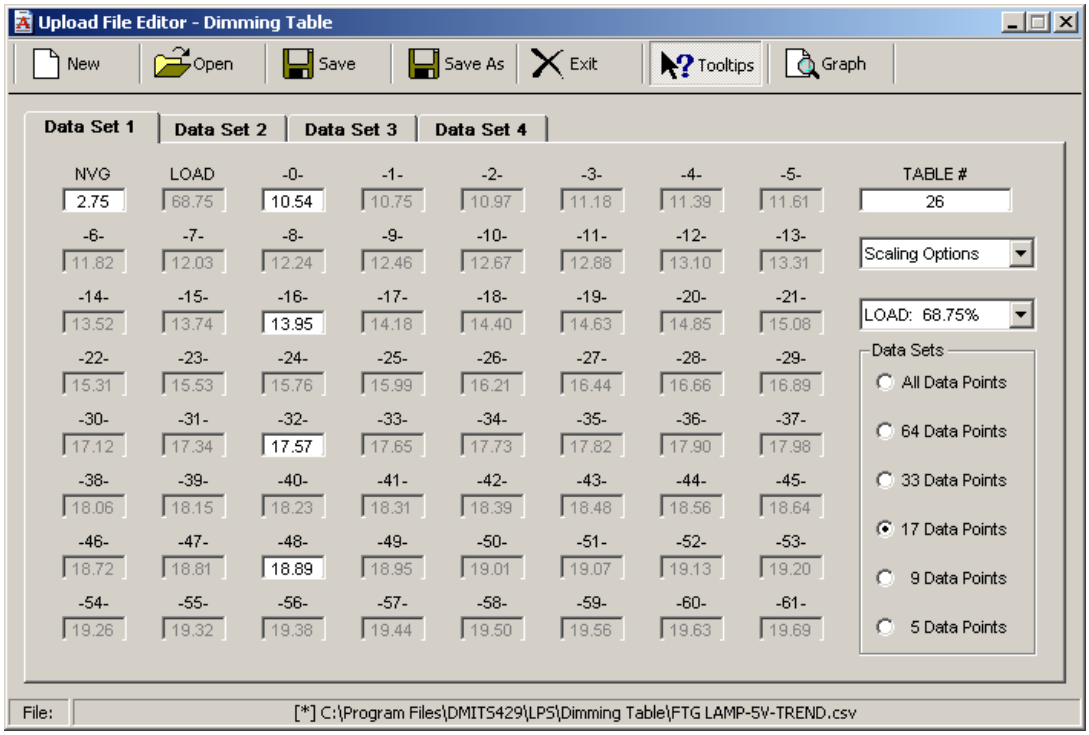
The **NVG** field is used to enter the output voltage for NVIS operation.

The **LOAD** field is used to program the load ratio lookup table for the output. This value is set by selecting the appropriate value in the **LOAD** combo box. The load ratio can be computed for each output by dividing the expected operational load of the output by the maximum load for the output (28 V = 0.5 mA max; 5V = 0.2mA max) and selecting the closest available load ratio from the combo box. Sixteen load ratios are available, spanning from 6.25% to 100.00 % in 6.25% increment.

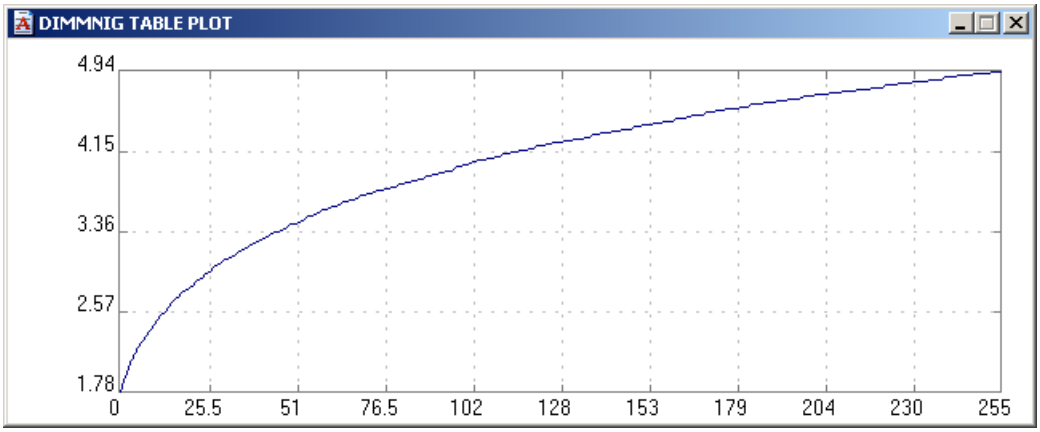
The **TABLE #** field is used to enter the dimming table number, from 1 to 40. Dimming tables from 1 to 15 correspond to the 5 Volts outputs whereas dimming tables from 16 to 40 correspond to the 28 Volts outputs.

The **Scaling Options** combo box contain the **Rescale to 28/5** and **Rescale to 5/28** options and are used to multiply each output voltage fields by the corresponding scaling factor.

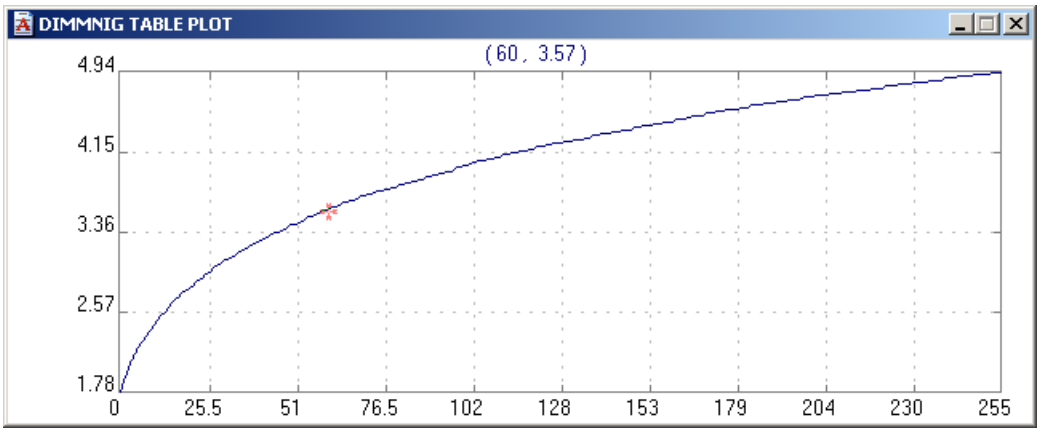
The **Data Sets** radio buttons determine how many data points must be entered by the user to complete the dimming table. When the **All Data Points** radio button is checked, all data points are available for editing. When one of the other radio buttons is checked, only that amount of data points are available for editing. When selected, these options will only enable the necessary data point fields; intermediate data points are disabled and their data point values linearly extrapolated.



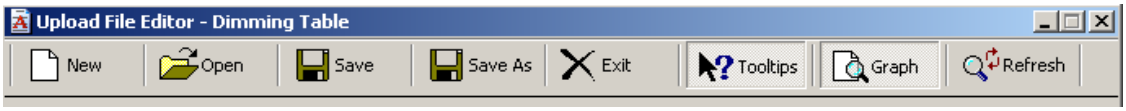
The Graph toolbar button is used to plot the data points. When in the pushed position, the plot is displayed[1], when in the popped position, the plot is not displayed. The abscissa axis represents dimming potentiometer's position while the ordinate axis represents corresponding output voltage.



Left clicking in the plot window will display a red marker and the point's coordinate will be displayed in the upper portion of the window.



When the plot window is displayed, the Refresh button is added to the editor's toolbar.



[1] When displayed or refreshed, the plot window is moved to the upper right position of the screen.

The plot is not modified in real time while data points are modified. To reflect changes made to the data points, the **Refresh** toolbar button must be pressed.

Note:

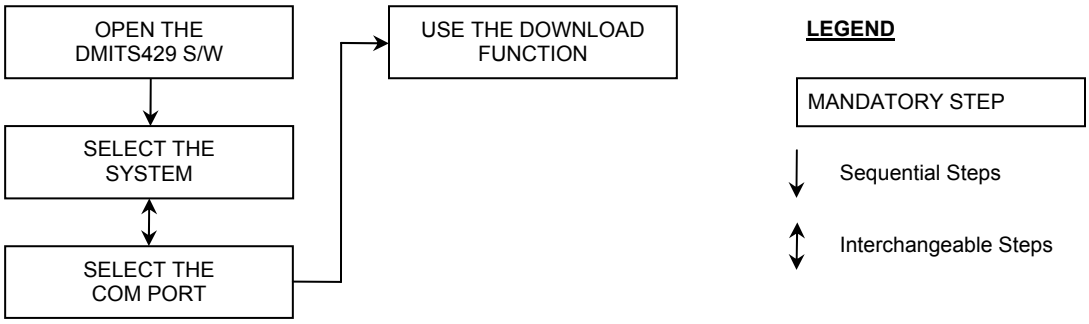
Output voltage values displayed when a dimming table file is opened may not exactly match the values displayed prior to saving the file. Precision is lost when file is saved as double precision variables are cast into byte variables.

3.7 MAINTENANCE FUNCTION FLOWCHART

The following process flowcharts apply when using the maintenance function described in section 4.0.

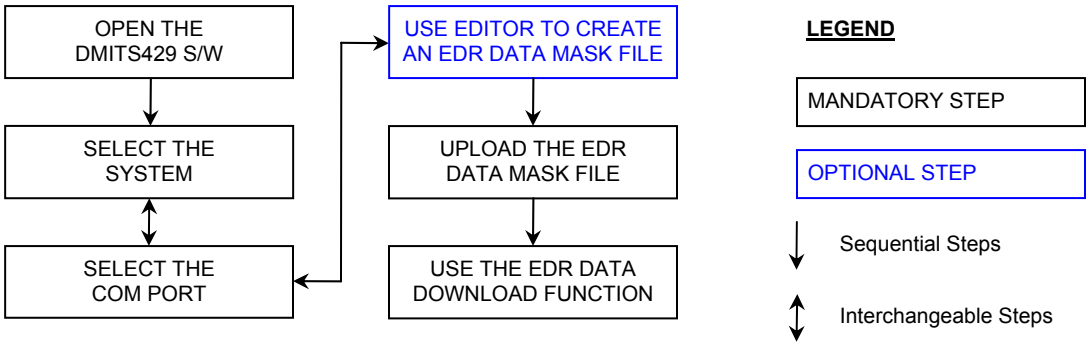
3.7.1 Download Functions

Except for the exception described in section 3.7.2, the following represents the flowchart for all the download functions.



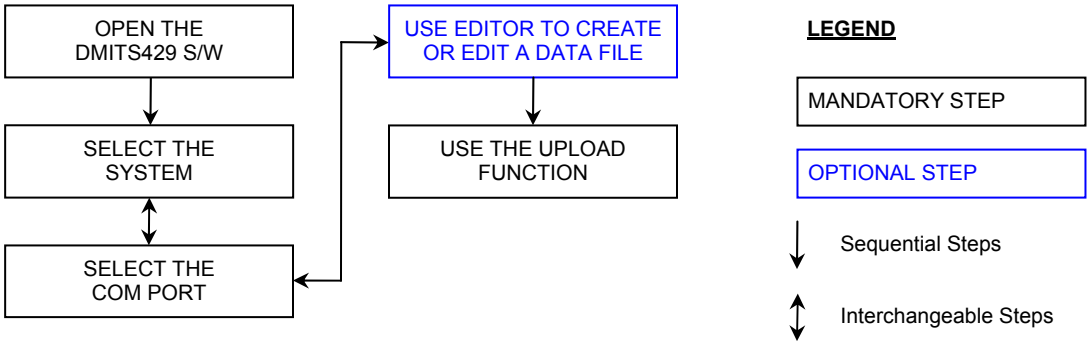
3.7.2 Download Functions - Exceptions

The following represents the flowchart for the Download EDR Data (section 4.2.1) function.



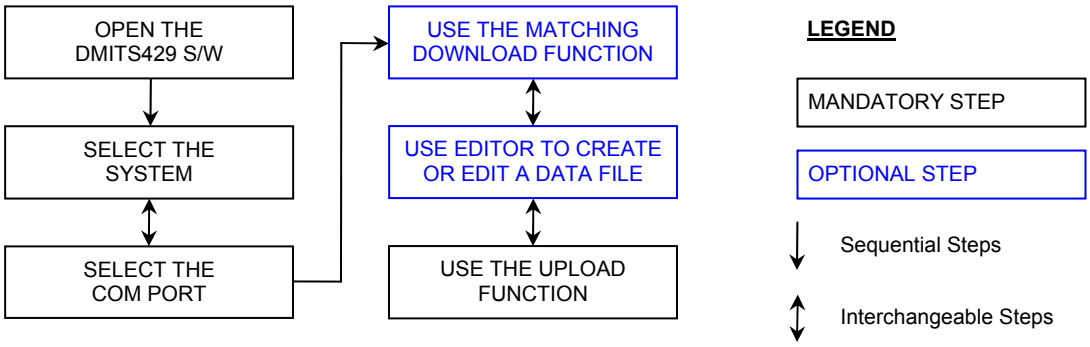
3.7.3 Upload Functions

Except for the exceptions described in section 3.7.4, the following represents the flowchart for all the upload functions.



3.7.4 Upload Functions - Exceptions

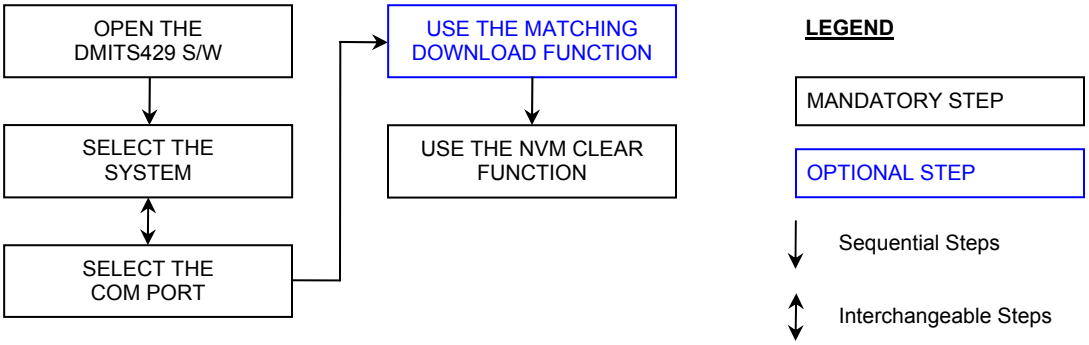
The following represents the flowchart for the Upload Aircraft Data (section 4.1.8) and the Upload Dimming Table (4.4.7) functions.



3.7.5 NVM Clear Functions - Inhibited

The following represents the flowchart for all the “inhibited” NVM clear functions.

.

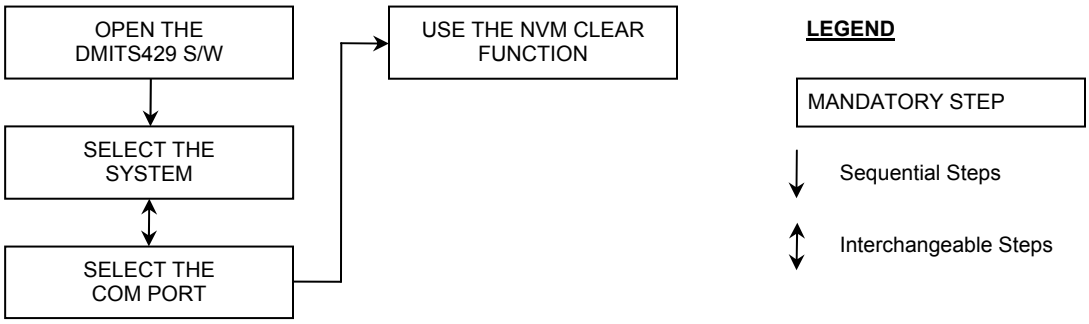


Note:

Failure to use the matching download function prior to using a NVM clear function will result in a **clear not allowed** response from the target system.

3.7.6 NVM Clear Functions - Non-Inhibited

The following represents the flowchart for all the “non-inhibited” NVM clear functions.



4.0 MAINTENANCE FUNCTIONS

4.1 ADIU MAINTENANCE FUNCTIONS

There are two ADIU channels installed on the model 429 helicopter. Channel selection is done via the GSE switch box. ADIU maintenance functions include:

Download Functions

- ADIU Faults (section 4.1.1)
- Exceedances (section 4.1.2)
- Chip History (section 4.1.3)
- Aircraft Flight Log (section 4.1.4)
- Timers/Counters (section 4.1.5)
- Power Assurance (section 4.1.6)
- Aircraft Data (section 4.1.7)

Upload Functions

- Aircraft Data (section 4.1.8)

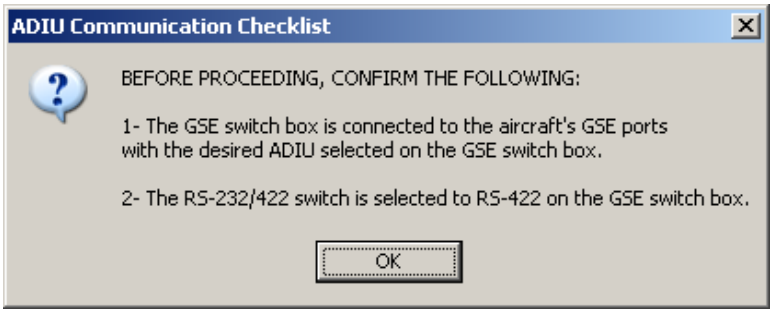
NVM Clear Functions

- ADIU Faults (section 4.1.9)
- Exceedance Flags (section 4.1.10)
- Exceedance History (section 4.1.11)
- Chip History (section 4.1.12)
- Flight Log History (section 4.1.13)
- Timers/Counters (section 4.1.14)
- Initialize ADMM (section 4.1.15)

Discrete Override

- Fuel XFER Override (section 4.1.16)

When the ADIU is selected as the desired system (**Select System->ADIU**) and the communication port is configured (**Select Port->COMX**), the ADIU's communication checklist message box is displayed. The message box details the required setup to interface with the ADIU's maintenance functions.



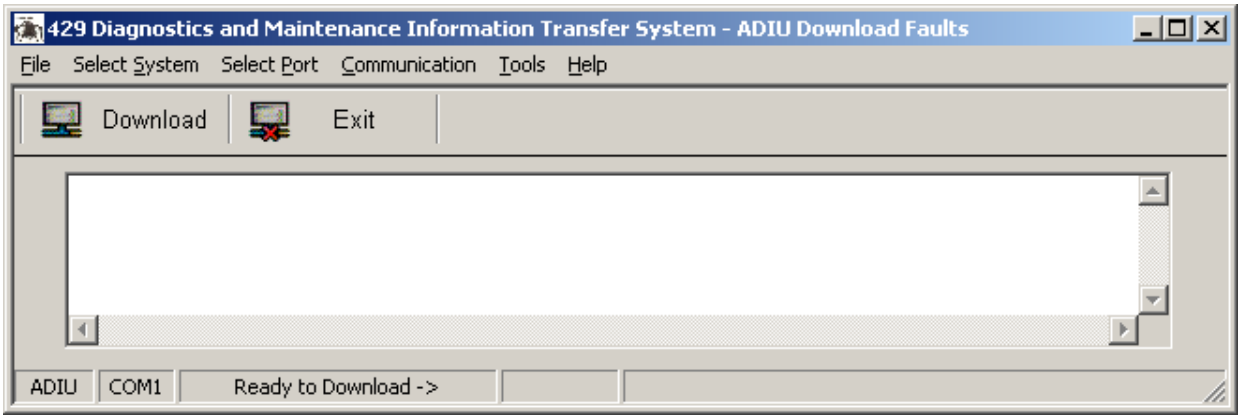
After the setup is completed and the message box is closed, the ADIU's maintenance functions may be accessed through the **Communication** drop down menu.

After performing a maintenance function, the third status pane will report one of the following status messages:

STATUS MESSAGE	DESCRIPTION	SOURCE
STATUS: READY	Receipt of CR with no command	ADIU
STATUS: CLEAR COMPLETE	Successful completion of clear command	ADIU
STATUS: CLR NOT ALLOWED	Receipt of inhibited clear command	ADIU
STATUS: CRC ERROR	Receipt of data with CRC error	ADIU
STATUS: INVALID CMD	Receipt of invalid command sequence	ADIU
STATUS: UPLOAD ERROR	Parity or format error in uploaded data	ADIU
STATUS: ADMM FAILED	ADMM failed, unable to perform action	ADIU
STATUS: UPLD COMPLETE	Successful completion of upload command	ADIU
STATUS: VERIFY ON DU	Successful completion of the command should be verified on the DU	DMITS429
STATUS: ERROR - NO FEEDBACK	No feedback from ADIU after using an upload or a clear command	DMITS429
STATUS: UPLD ABORTED	Upload function was aborted using the **Abort** Toolbar button	DMITS429
STATUS: DNLD COMPLETE	Download function has completed	DMITS429
STATUS: ERROR - NO DATA	Download function has failed, no data was received from the ADIU	DMITS429
STATUS: DNLD ABORTED	Download function was aborted using the **Abort** Toolbar button	DMITS429
STATUS: NVM CLEAR CANCELLED	Memory clear was cancelled by selecting **No** on the confirmation message box	DMITS429

4.1.1 Download ADIU Faults

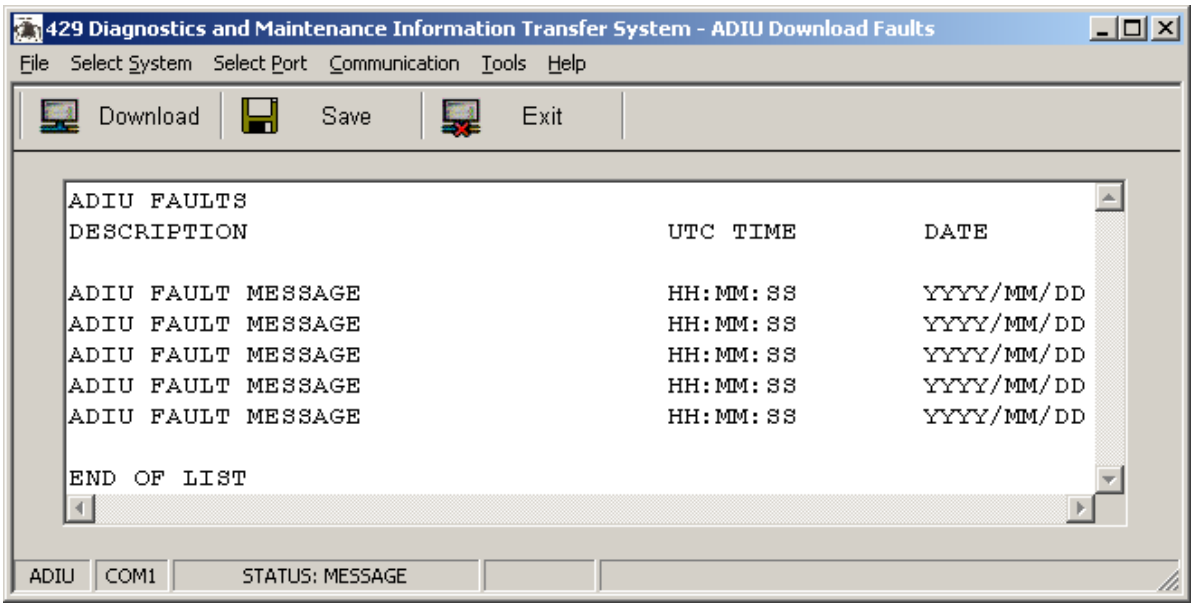
The ADIU Fault download function downloads the fault messages from the ADIU. The number of records to be downloaded will depend on the data recorded in memory. The function may be accessed by selecting the **Communication->Download Data->ADIU Faults** menu item.



The **Download** button will launch the download process.

While data is being downloaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the download process.

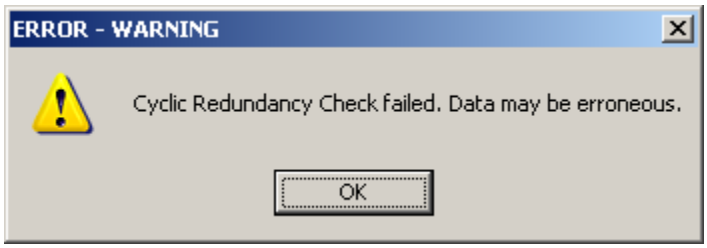
When the data is successful downloaded, the data is displayed in the viewing window and the **Save** button is added to the toolbar. The third status pane will display one of the status messages as defined in section 4.1.



The fault messages are displayed in text format along with the time and date at which they were logged. The following table contains the complete listing of faults reported by ADIU; refer to the maintenance manual for more details on each fault.

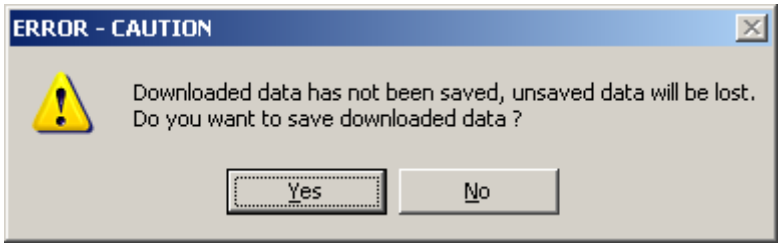
Fault Messages	
ADMM synchronization Failure	Channel Interconnect Failure
Chip System Test Failure	Analog Inputs Miscompare
Not Receiving L-DU Arinc Data	Discrete Inputs Miscompare
Not Receiving C-DU Arinc Data	Serial I/O Failure
Not Receiving spare Arinc Data	I/O Processor Failure
Not Receiving R-DU Arinc Data	Power Supply Failure
Not Receiving Left ECU Data	CPU Failure
Not Receiving Right ECU Data	Real Time Clock Failure
Channel Interconnect Failure	ADMM Read/Write Failure
Analog Inputs Miscompare	ADIU Internal Failure

When a CRC error is detected, the data is displayed in the viewing window, the **Save** button is added to the toolbar and the CRC error message box is displayed.



The **Save** toolbar button is used to save the downloaded data. The **Save** toolbar button will open the Save File Dialog Box, which lets the user specify the drive, directory, and name of the file to save. The Save File Dialog Box will apply the function's file extension mask (*.daf) and will default to the {root}\ADIU\ADIU Faults\ folder. When saved, the filename will be displayed in the fifth status pane.

If data was successful downloaded but not subsequently saved, attempting to exit the ADIU Faults download function will display the unsaved data error message box:



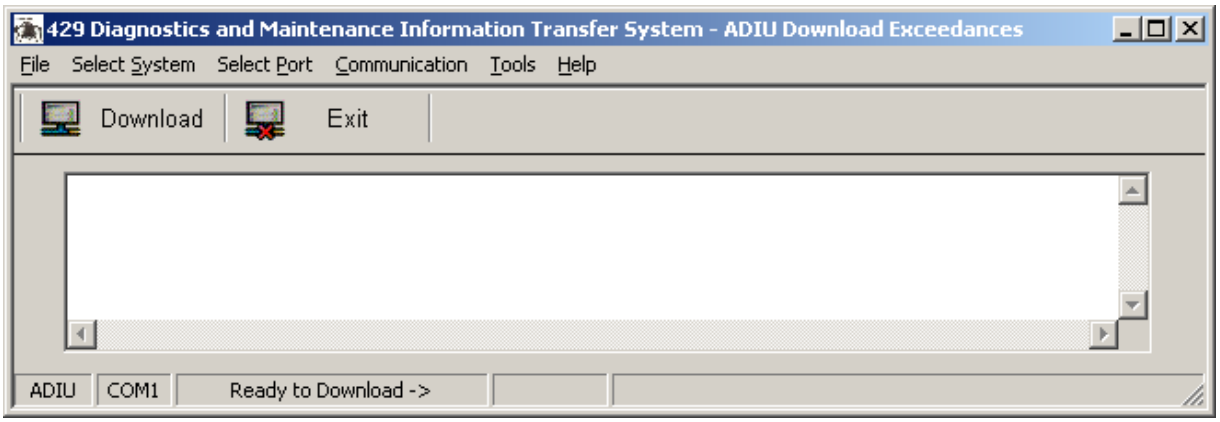
Selecting **Yes** will let the user save the downloaded data before exiting the ADIU Faults download function. Selecting **No** will exit the ADIU Faults download function without saving the downloaded data.

Doing one of the following will exit the ADIU Faults download function and close (or reset) the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Close** button

4.1.2 Download Exceedances

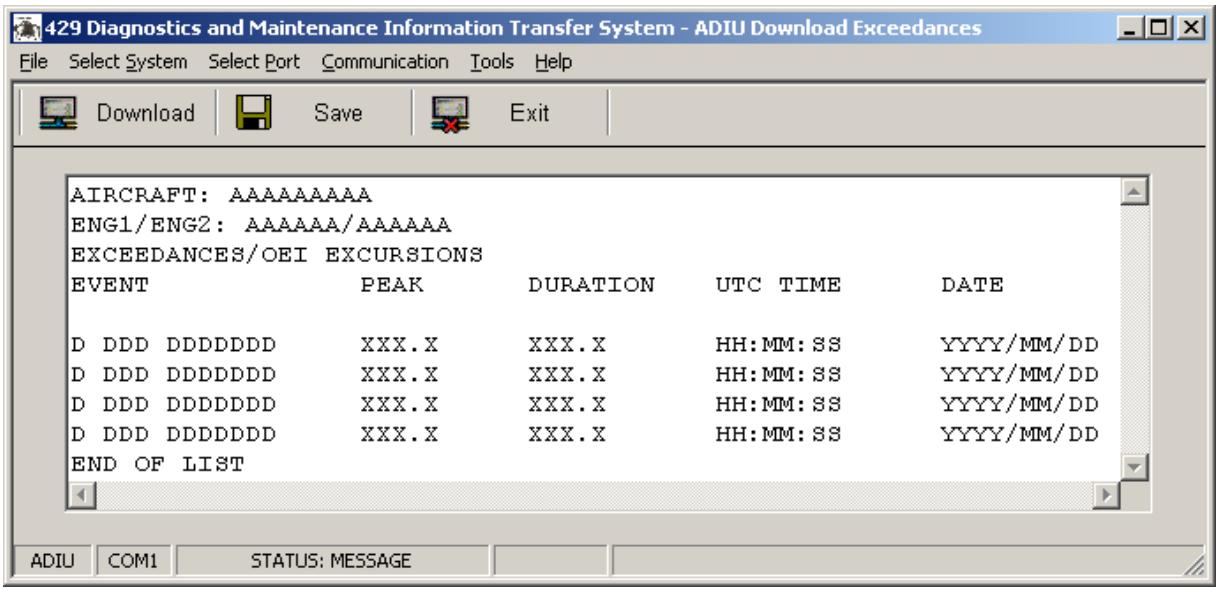
The Exceedance download function downloads the exceedance history data from the ADIU, preceded by the aircraft tail number and engine serial numbers. The number of records to be downloaded will depend on the data recorded in memory. The function may be accessed by selecting the **Communication->Download Data->Exceedances** menu item.



The **Download** button will launch the download process.

While data is being downloaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the download process.

When the data is successful downloaded, the data is displayed in the viewing window and the **Save** button is added to the toolbar. The third status pane will display one of the status messages as defined in section 4.1.



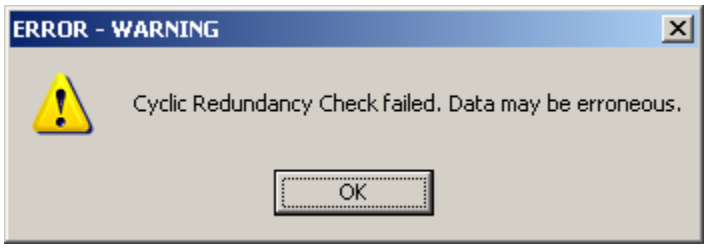
"A" indicates an alpha-numeric character and "X" indicates a numeric character "0" thru "9". The aircraft and/or engine serial numbers may appear as blank if values have not been uploaded to the ADIU. The "D" characters under EVENT are decoded according to the following table:

System	Text (1 char)
Xmsn	X
Eng1	1
Eng2	2
Rotor	R

Parameter	Text (3 char)
NP/NR	NP or NR
TRQ	TRQ
MGT	MGT
NG	NG_

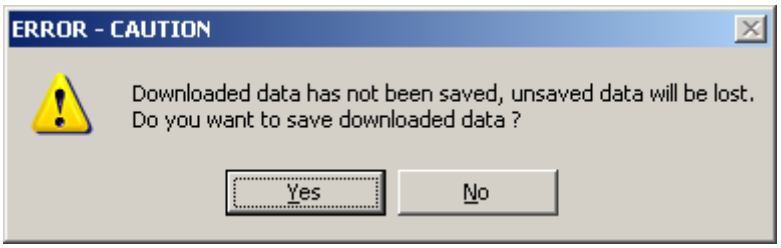
Event	Text (7 char)
30S Excursion/Exceed	30-SEC
2.5M Excursion/Exceed	2.5-MIN
2.M Excursion/Exceed	2-MIN
30M Exceed	30-MIN
Limit Exceed	LIMIT
Start Exceeded	STRT
5 M T/O Exceed	E-TO
AEO Limit Exceed	E-AEO

When a CRC error is detected, the data is displayed in the viewing window, the **Save** button is added to the toolbar and the CRC error message box is displayed.



The **Save** toolbar button is used to save the downloaded data. The **Save** toolbar button will open the Save File Dialog Box, which lets the user specify the drive, directory, and name of the file to save. The Save File Dialog Box will apply the function's file extension mask (*.dex) and will default to the {root}\ADIU\Exceedances\ folder. When saved, the filename will be displayed in the fifth status pane.

If data was successful downloaded but not subsequently saved, attempting to exit the ADIU Exceedance download function will display the unsaved data error message box:



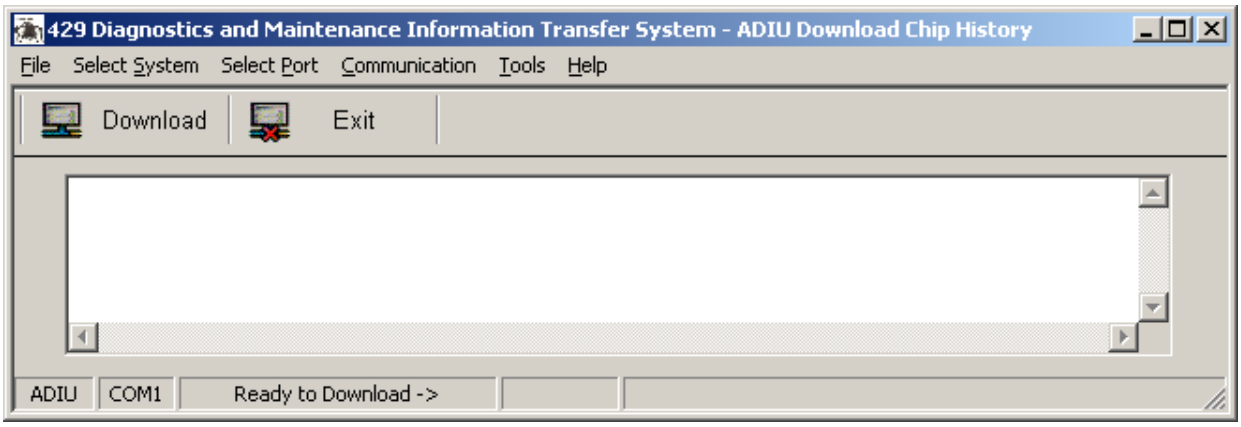
Selecting **Yes** will let the user save the downloaded data before exiting the ADIU Exceedance download function. Selecting **No** will exit the ADIU Exceedance download function without saving the downloaded data.

Doing one of the following will exit the ADIU Exceedance download function and close (or reset) the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Close** button

4.1.3 Download Chip History

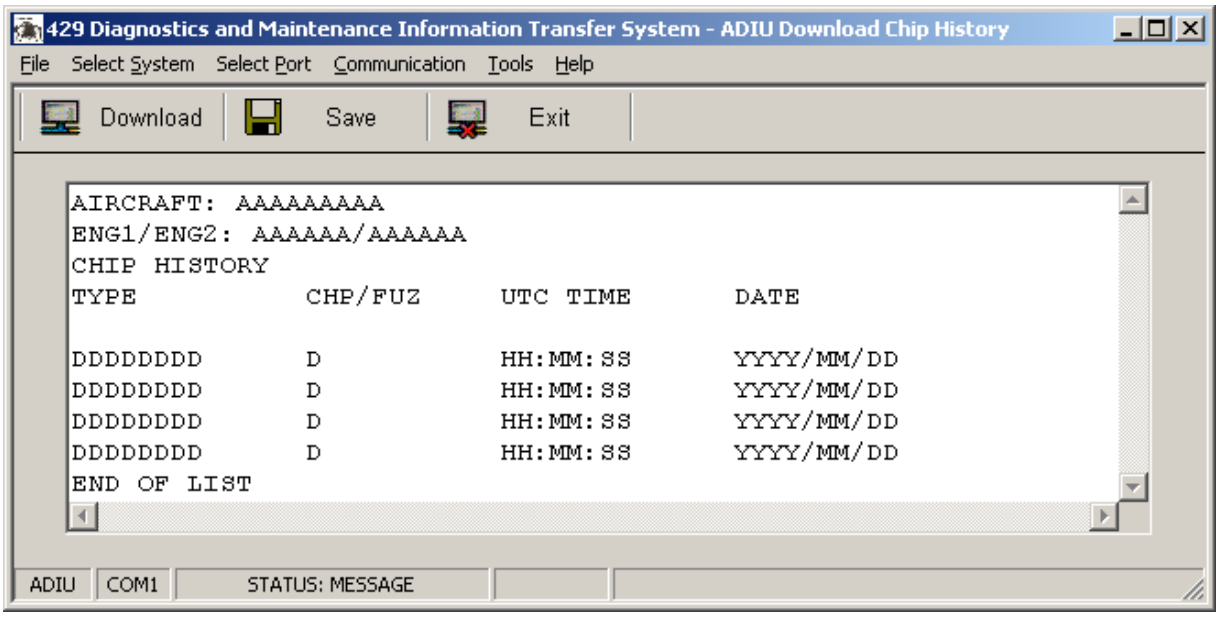
The Chip History download function downloads the chip history data from the ADIU, preceded by the aircraft tail number and engine serial numbers. The number of records to be downloaded will depend on the data recorded in memory. The function may be accessed by selecting the **Communication->Download Data->Chip History** menu item.



The Download button will launch the download process.

While data is being downloaded, the File, Select System, Select Port and the Communication drop down menus are deactivated. The toolbar buttons are modified and the Abort button is displayed; pressing this button will terminate the download process.

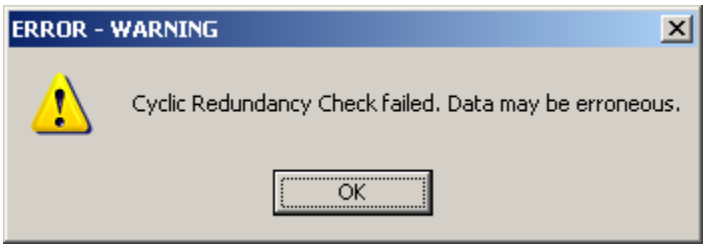
When the data is successful downloaded, the data is displayed in the viewing window and the **Save** button is added to the toolbar. The third status pane will display one of the status messages as defined in section 4.1.



"A" indicates an alpha-numeric character. The "D" under CHP/FUZ is an ASCII "C" character if a chip was recorded or an "F" character if fuzz was recorded. The aircraft and/or engine serial numbers may appear as blank if values have not been uploaded to the ADIU. The "D" characters under TYPE are decoded according to the following table:

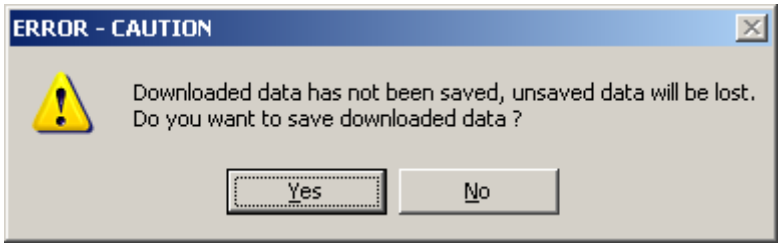
Chip Type	Text (8 Char)
Left Transmission Input	LFT XMSN
Right Transmission Input	RGT XMSN
Mast	MAST
Tail Rotor Gearbox	TR GB
Engine 1	ENG 1
Engine 2	ENG 2

When a CRC error is detected, the data is displayed in the viewing window, the **Save** button is added to the toolbar and the CRC error message box is displayed.



The **Save** toolbar button is used to save the downloaded data. The **Save** toolbar button will open the Save File Dialog Box, which lets the user specify the drive, directory, and name of the file to save. The Save File Dialog Box will apply the function's file extension mask (*.dch) and will default to the {root}\ADIU\Chip History\ folder. When saved, the filename will be displayed in the fifth status pane.

If data was successful downloaded but not subsequently saved, attempting to exit the ADIU Chip History download function will display the unsaved data error message box:



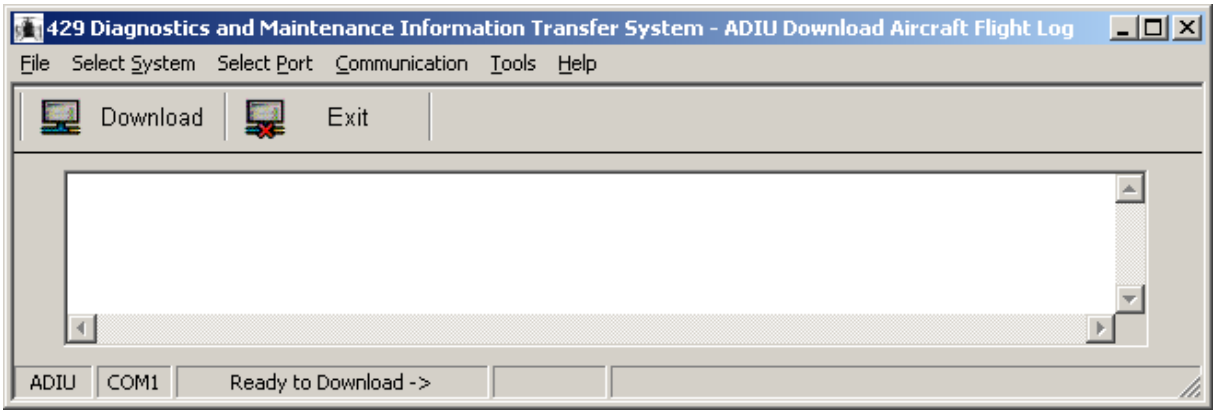
Selecting **Yes** will let the user save the downloaded data before exiting the ADIU Chip History download function. Selecting **No** will exit the ADIU Chip History download function without saving the downloaded data.

Doing one of the following will exit the ADIU Chip History download function and close (or reset) the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Close** button

4.1.4 Download Aircraft Flight Log

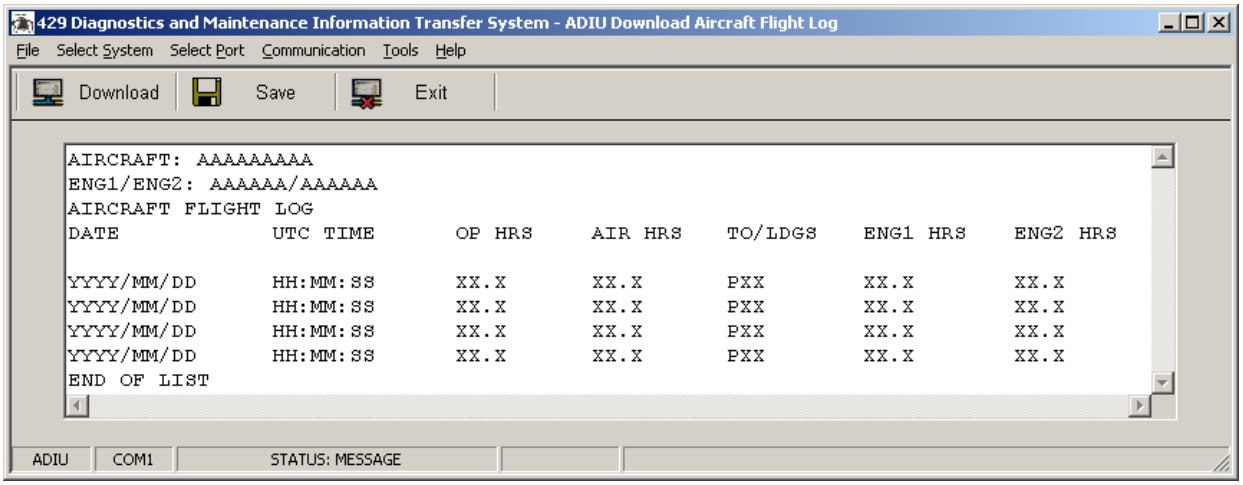
The Aircraft Flight Log download function downloads the Aircraft Flight Log data from the ADIU, preceded by the aircraft tail number and engine serial numbers. The number of records to be downloaded will depend on the data recorded in memory. The function may be accessed by selecting the **Communication->Download Data->Aircraft Flight Log** menu item.



The **Download** button will launch the download process.

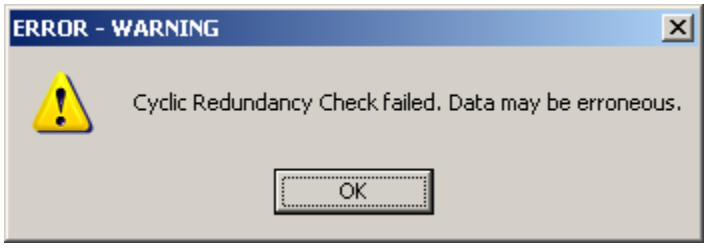
While data is being downloaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the download process.

When the data is successful downloaded, the data is displayed in the viewing window and the **Save** button is added to the toolbar. The third status pane will display one of the status messages as defined in section 4.1.



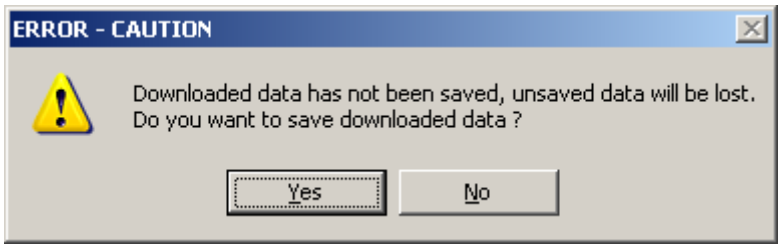
"A" indicates an alpha-numeric character and "X" indicates a numeric character "0" thru "9". The aircraft and/or engine serial numbers may appear as blank if values have not been uploaded to the ADIU. For the "TO/LDGS" field, the one hundreds digit will be displayed as a "P" to indicate a power interruption.

When a CRC error is detected, the data is displayed in the viewing window, the **Save** button is added to the toolbar and the CRC error message box is displayed.



The **Save** toolbar button is used to save the downloaded data. The **Save** toolbar button will open the Save File Dialog Box, which lets the user specify the drive, directory, and name of the file to save. The Save File Dialog Box will apply the function's file extension mask (*.dal) and will default to the {root}\ADIU\Aircraft Flight Log\ folder. When saved, the filename will be displayed in the fifth status pane.

If data was successful downloaded but not subsequently saved, attempting to exit the ADIU Aircraft Flight Log download function will display the unsaved data error message box:



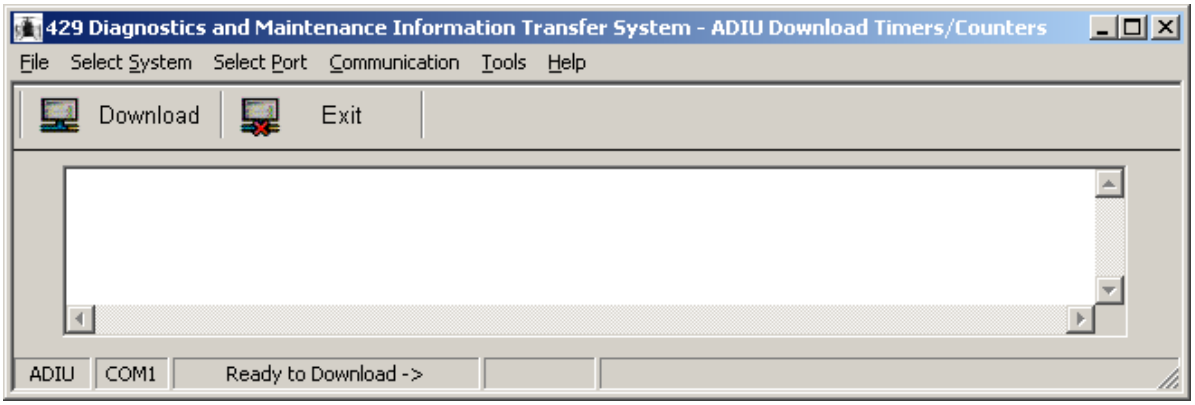
Selecting **Yes** will let the user save the downloaded data before exiting the ADIU Aircraft Flight Log download function. Selecting **No** will exit the ADIU Aircraft Flight Log download function without saving the downloaded data.

Doing one of the following will exit the ADIU Aircraft Flight Log download function and close (or reset) the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Close** button

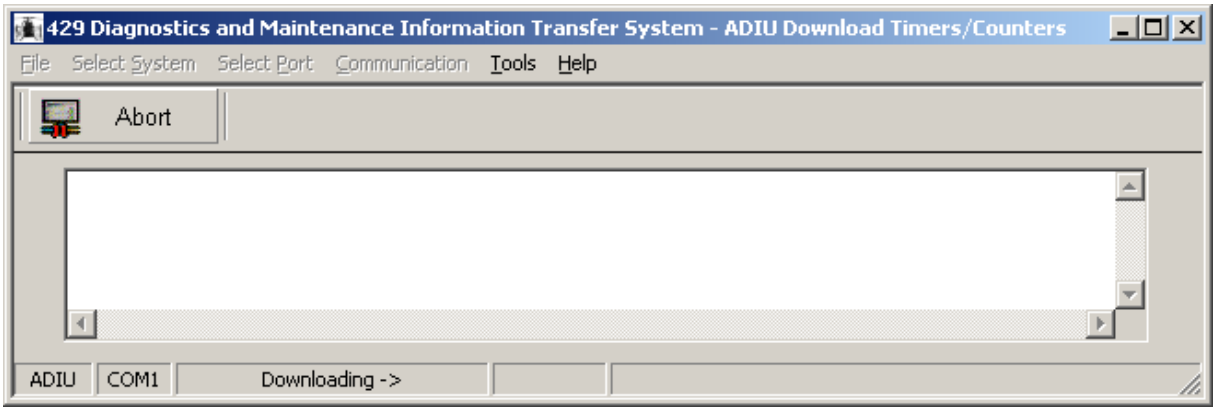
4.1.5 Download Timers/Counters

The Timer/Counters download function downloads log timer and counter data from the ADIU. The number of records to be downloaded will depend on the data recorded in memory. The function may be accessed by selecting the **Communication->Download Data->Timers/Counters** menu item.

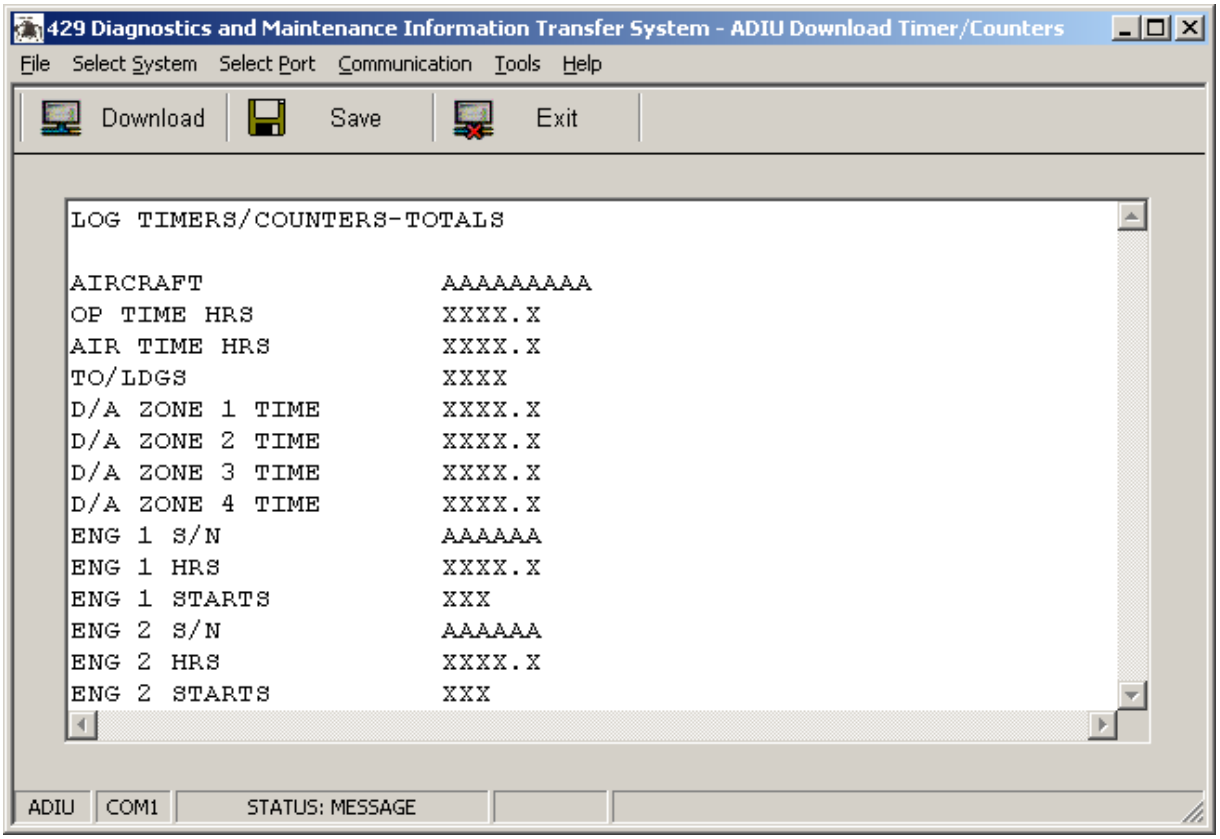


The **Download** button will launch the download process.

While data is being downloaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the download process.

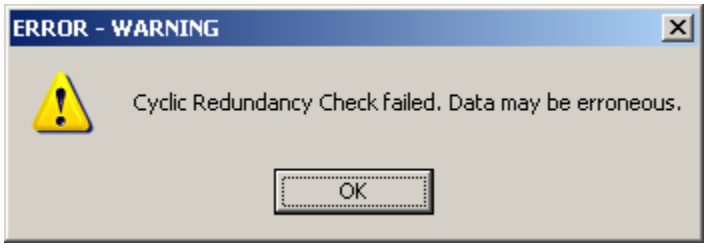


When the data is successful downloaded, the data is displayed in the viewing window and the **Save** button is added to the toolbar. The third status pane will display one of the status messages as defined in section 4.1.



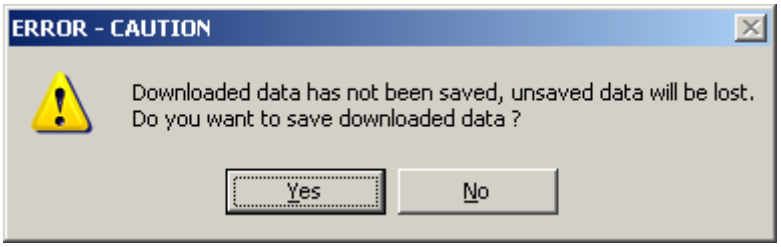
"A" indicates an alpha-numeric character and "X" indicates a numeric character "0" thru "9". Three dashes "- - -" indicates a parameter is invalid or has not been initialized in NVM.

When a CRC error is detected, the data is displayed in the viewing window, the **Save** button is added to the toolbar and the CRC error message box is displayed.



The **Save** toolbar button is used to save the downloaded data. The **Save** toolbar button will open the Save File Dialog Box, which lets the user specify the drive, directory, and name of the file to save. The Save File Dialog Box will apply the function's file extension mask (*.dtc) and will default to the {root}\ADIU\Timers Counters\ folder. When saved, the filename will be displayed in the fifth status pane.

If data was successful downloaded but not subsequently saved, attempting to exit the ADIU Timer/Counters download function will display the unsaved data error message box:



Selecting **Yes** will let the user save the downloaded data before exiting the ADIU Timer/Counters download function. Selecting **No** will exit the ADIU Timer/Counters download function without saving the downloaded data.

Doing one of the following will exit the ADIU Timer/Counters download function and close (or reset) the viewing window:

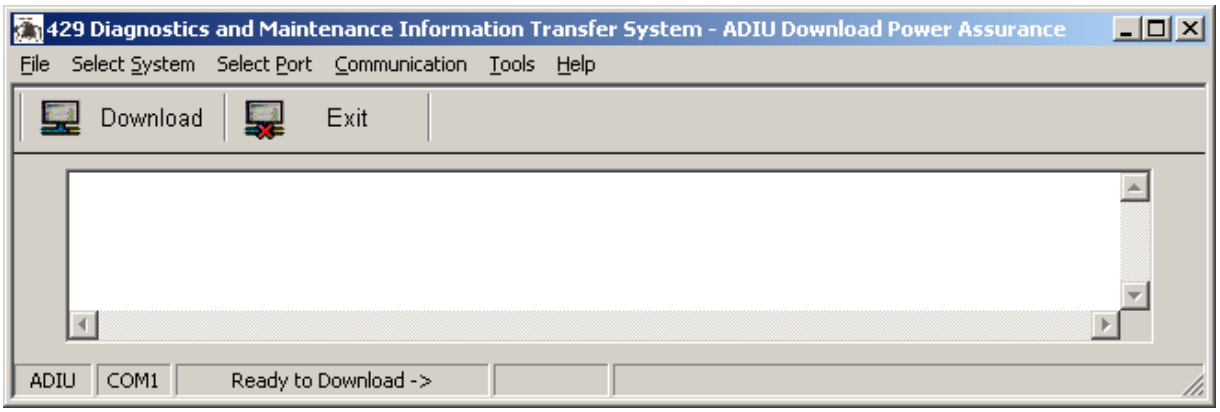
- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Close** button

4.1.6 Download Power Assurance

The Power Assurance download function downloads the power assurance history data from the ADIU, preceded by the aircraft tail number and engine serial numbers. The number of records to be downloaded will depend on the data recorded in memory. The function may be accessed by selecting the **Communication->Download Data->Power Assurance** menu item.

Note:

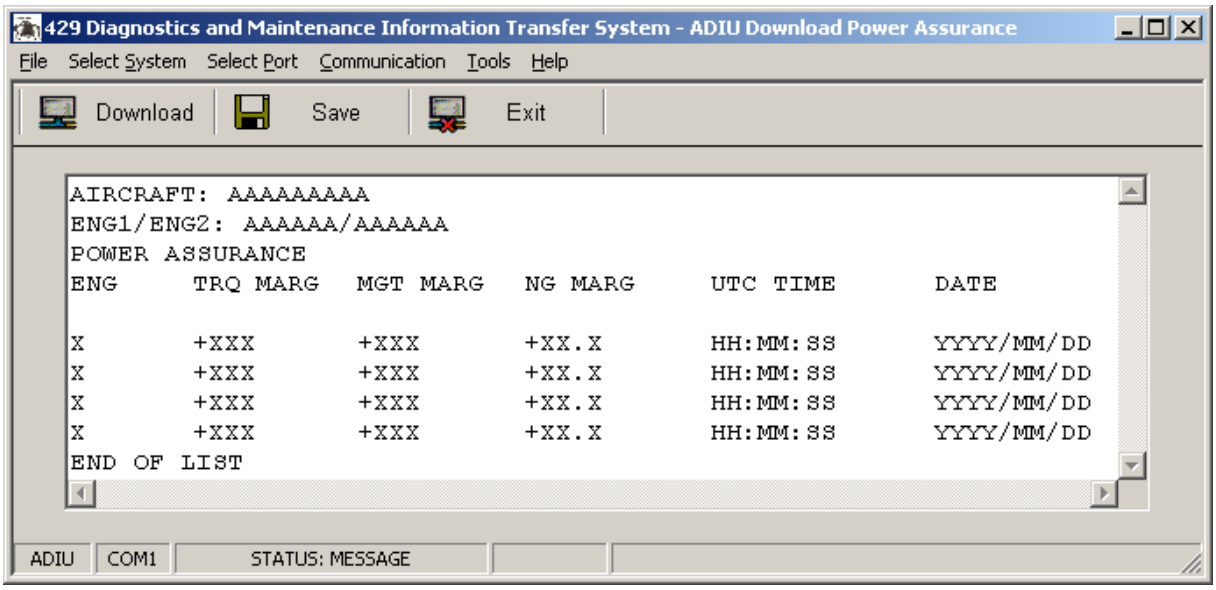
The ADIU power assurance download function is disabled for S/W 429-770-014-109, Version 1.0.



The **Download** button will launch the download process.

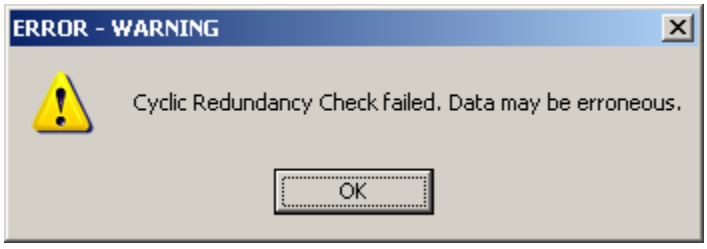
While data is being downloaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the download process.

When the data is successful downloaded, the data is displayed in the viewing window and the **Save** button is added to the toolbar. The third status pane will display one of the status messages as defined in section 4.1.



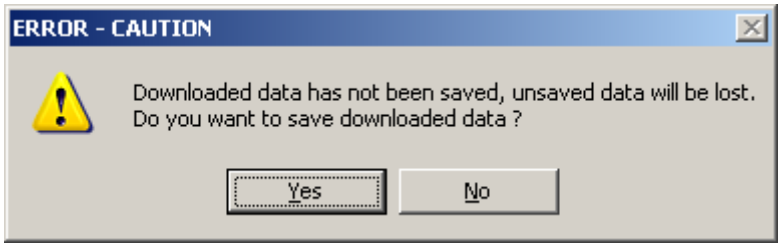
"X" indicates a numeric character "0" thru "9". The aircraft and/or engine serial numbers may appear as blank if values have not been uploaded to the ADIU.

When a CRC error is detected, the data is displayed in the viewing window, the **Save** button is added to the toolbar and the CRC error message box is displayed.



The **Save** toolbar button is used to save the downloaded data. The **Save** toolbar button will open the Save File Dialog Box, which lets the user specify the drive, directory, and name of the file to save. The Save File Dialog Box will apply the function's file extension mask (*.dpa) and will default to the {root}\ADIU\Power Assurance\ folder. When saved, the filename will be displayed in the fifth status pane.

If data was successful downloaded but not subsequently saved, attempting to exit the ADIU Power Assurance download function will display the unsaved data error message box:



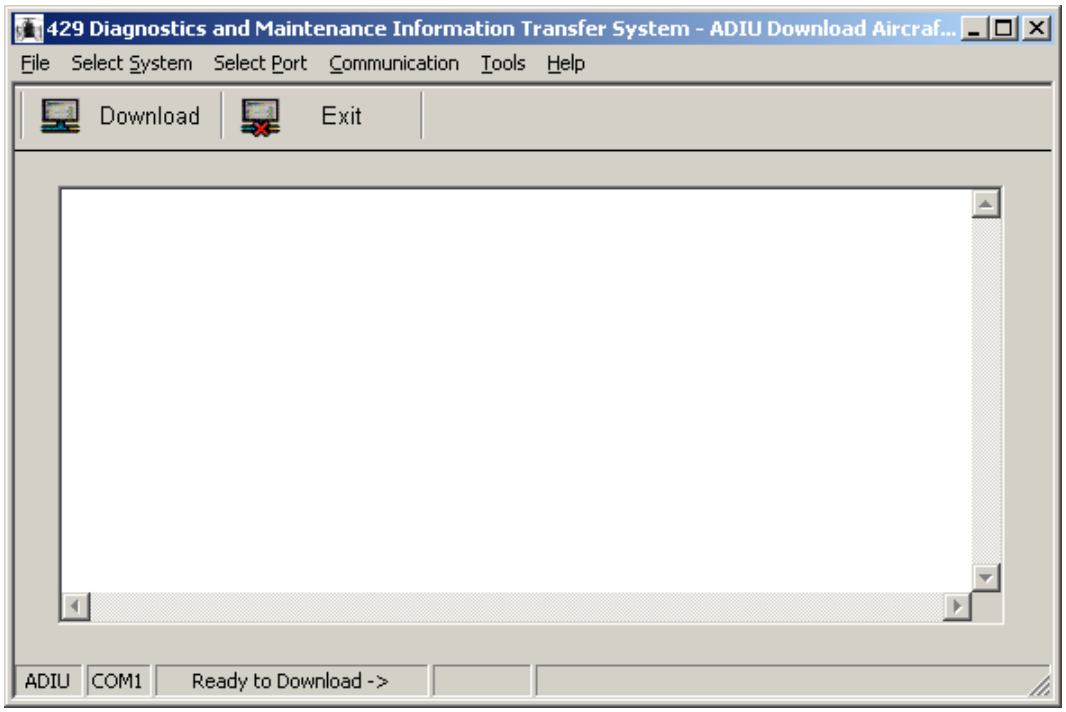
Selecting **Yes** will let the user save the downloaded data before exiting the ADIU Power Assurance download function. Selecting **No** will exit the ADIU Power Assurance download function without saving the downloaded data.

Doing one of the following will exit the ADIU Power Assurance download function and close (or reset) the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Close** button

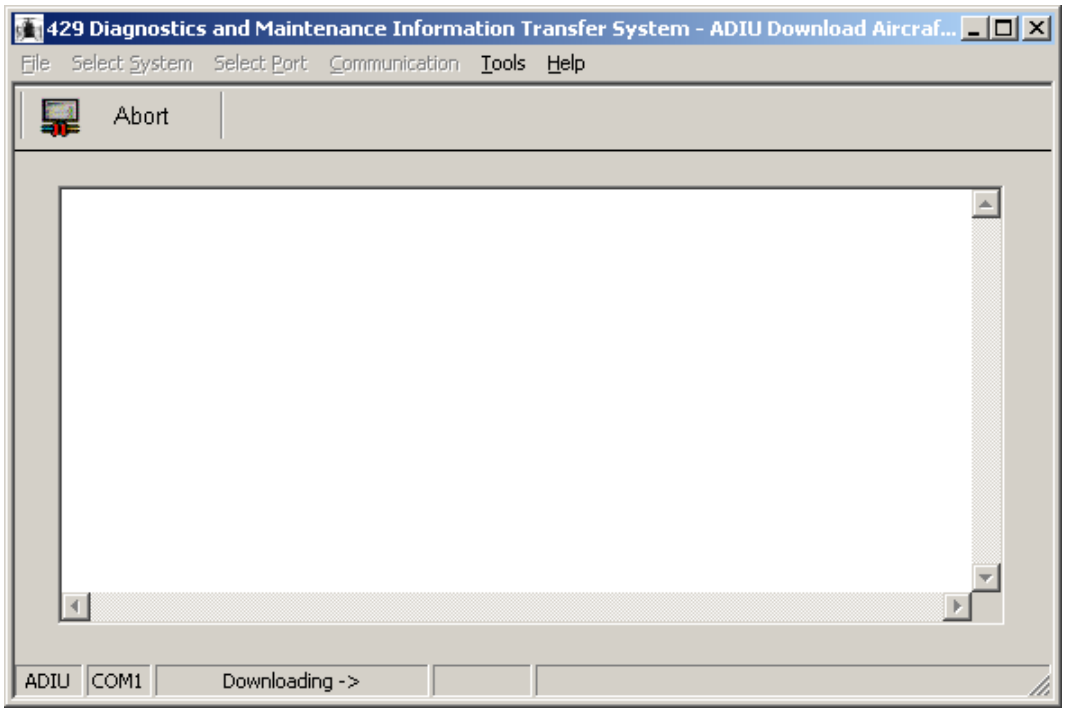
4.1.7 Download Aircraft Data

The Aircraft Data download function downloads the S/Ns, the fuel calibration settings, the weight & balance data and selected flight counters from the ADIU. The function may be accessed by selecting the **Communication->Download Data->Aircraft Data** menu item.

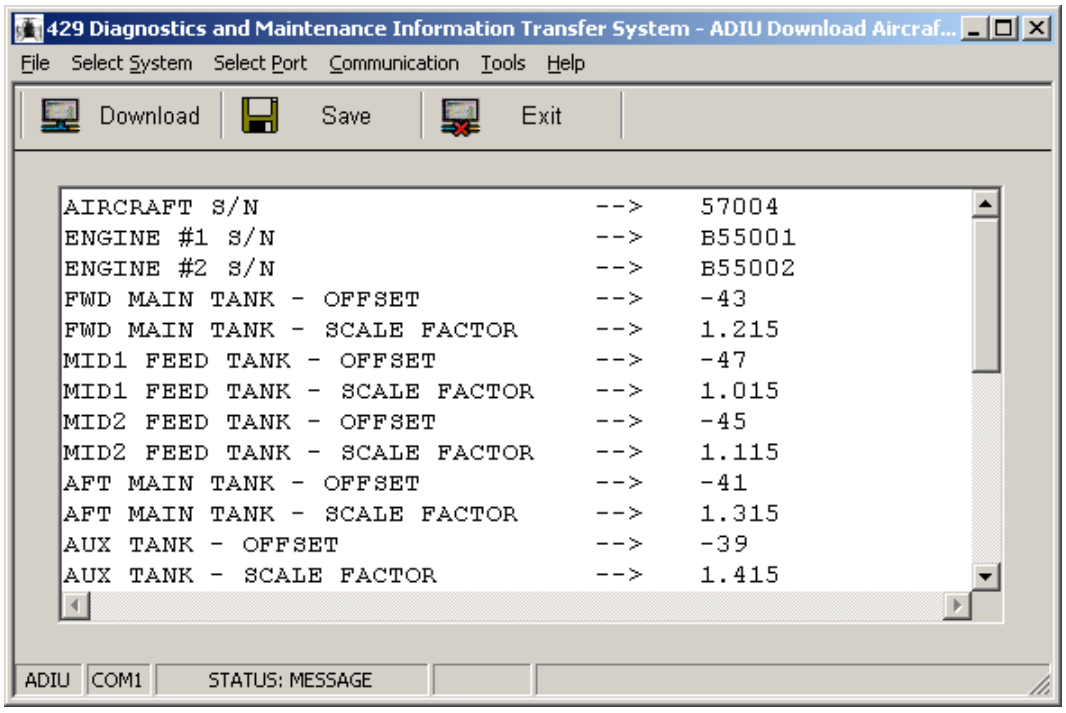


The **Download** button will launch the download process.

While data is being downloaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the download process.

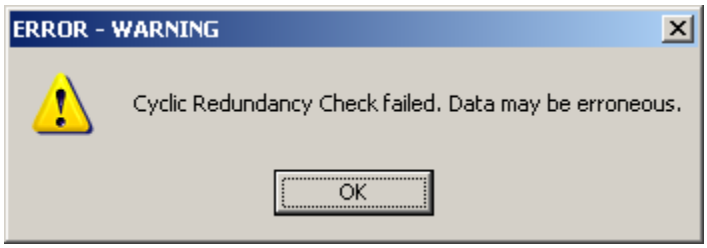


When the data is successful downloaded, the data is displayed in the viewing window and the **Save** button is added to the toolbar. The third status pane will display one of the status messages as defined in section 4.1.



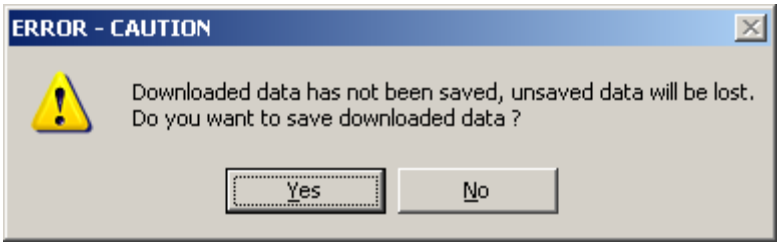
The aircraft and/or engine serial numbers may appear as blank if values have not been uploaded to the ADIU.

When a CRC error is detected, the data is displayed in the viewing window, the **Save** button is added to the toolbar and the CRC error message box is displayed.



The **Save** toolbar button is used to save the downloaded data. The **Save** toolbar button will open the Save File Dialog Box, which lets the user specify the drive, directory, and name of the file to save. The Save File Dialog Box will apply the function's file extension mask (*.adf) and will default to the {root}\ADIU\Aircraft Data\ folder. When saved, the filename will be displayed in the fifth status pane.

If data was successful downloaded but not subsequently saved, attempting to exit the ADIU Aircraft Data download function will display the unsaved data error message box:



Selecting **Yes** will let the user save the downloaded data before exiting the ADIU Aircraft Data download function. Selecting **No** will exit the ADIU Aircraft Data download function without saving the downloaded data.

Doing one of the following will exit the ADIU Aircraft Data download function and close (or reset) the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Close** button

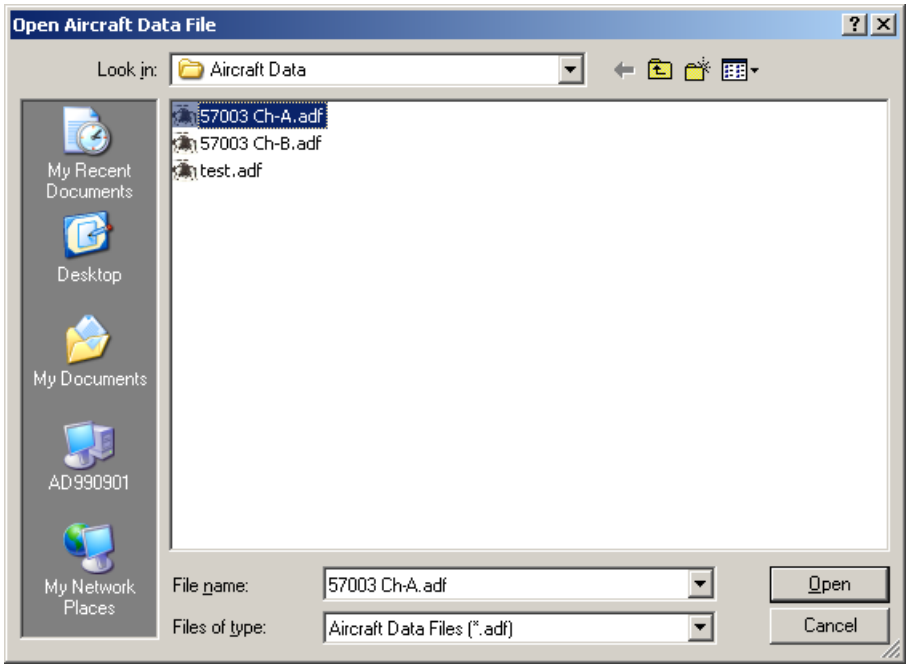
4.1.8 Upload Aircraft Data

The Aircraft Data upload function stores S/Ns, the fuel calibration settings, the weight & balance data and selected flight counters into NVM. The function may be accessed by selecting the **Communication->Upload Data->Aircraft Data** menu item.

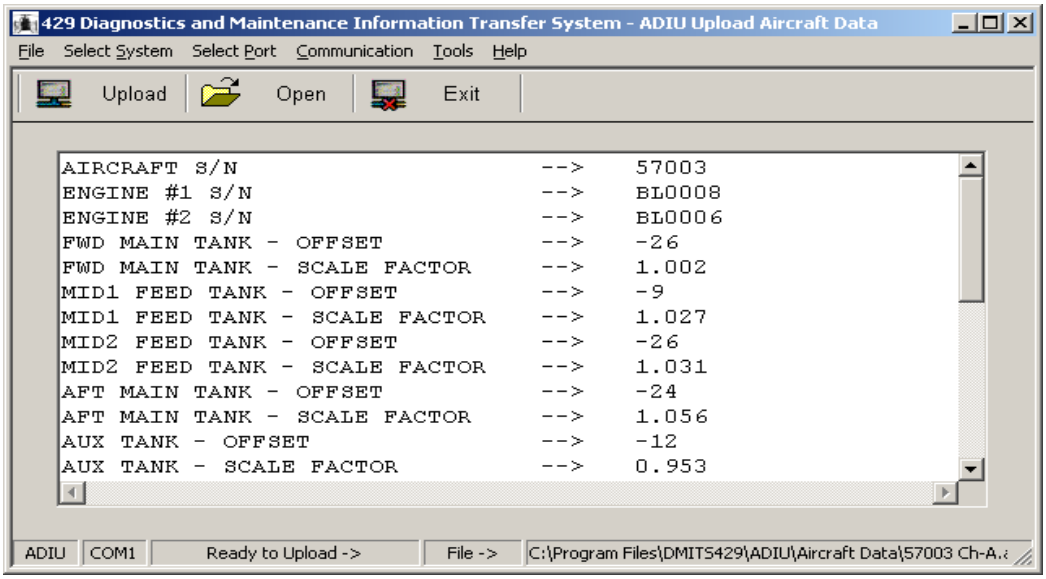
CAUTION:

Uploading an aircraft data file overwrites the existing aircraft data in the admm. When only selected parameters require changes, the user should first download and save the data per section 4.1.7. The parameters requiring change should be edited from the downloaded file and saved per section 3.6.5. The edited file can then be uploaded and the resulting upload will only change those edited parameters.

When selected, the Open File Dialog Box is displayed, which lets the user specify the drive, directory, and name of the file to open. The Open File Dialog Box will apply the function's file extension mask (*.uad) and will default to the {root}\ADIU\Aircraft Data\ folder.

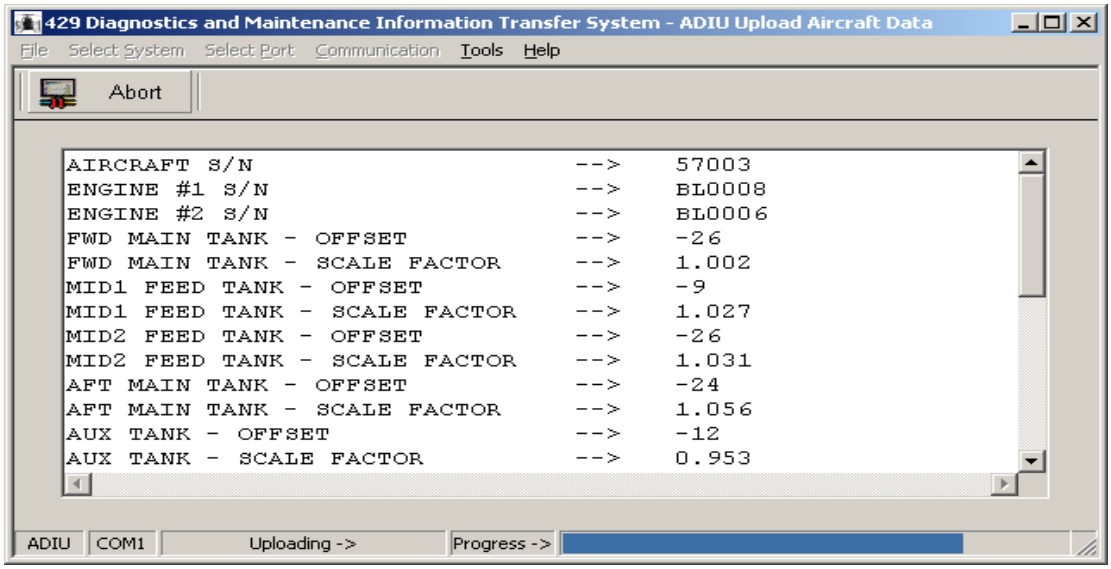


When opened, the file is displayed in the viewing window and the filename is displayed in the fifth status pane.

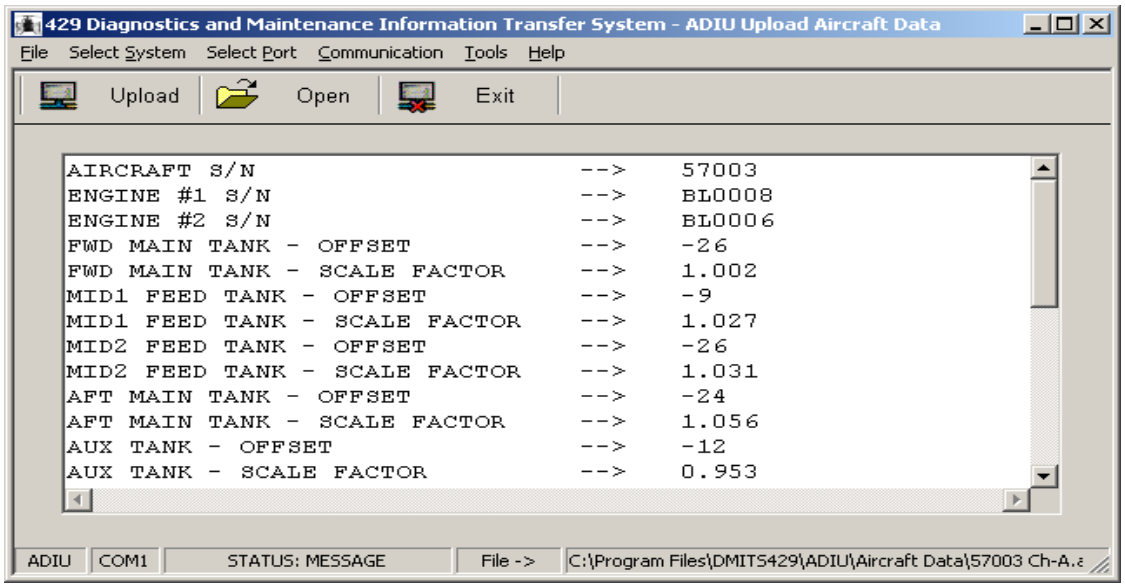


Pressing the **Open** button will display the Open File Dialog Box, at which point a different file may be selected for upload.

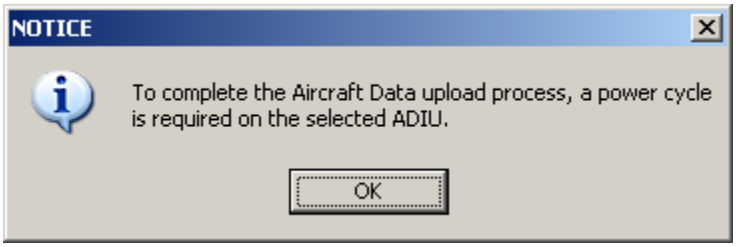
The **Upload** button will launch the upload process. While data is being uploaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The fifth status pane is used to display an upload progress bar. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the upload process.



When data is uploaded, the toolbar regains its original buttons and the third status pane will display one of the status messages as defined in section 4.1.



If the ADIU reports a STATUS: UPLD COMPLETE status message, a message box is displayed to indicate the required step to complete the upload process.

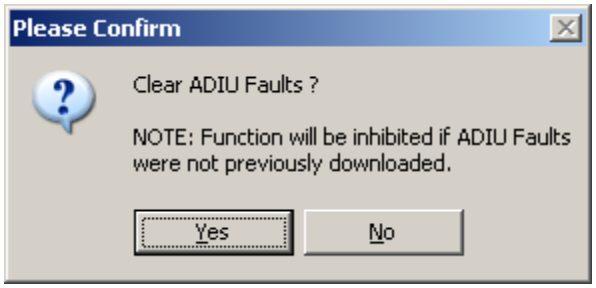


Doing one of the following will exit the ADIU Aircraft Data upload function and close the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Open** button and closing the Open File Dialog Box without selecting another file for upload
- Pressing the toolbar's **Close** button

4.1.9 NVM Clear ADIU Faults

The ADIU Fault NVM clear function marks the NVM records as erased from memory. The function may be accessed by selecting the **Communication->Clear NVM->ADIU Faults** menu item.



The confirmation message box is displayed. The **Yes** button will send the NVM clear command. The **No** button will cancel the clear operation.

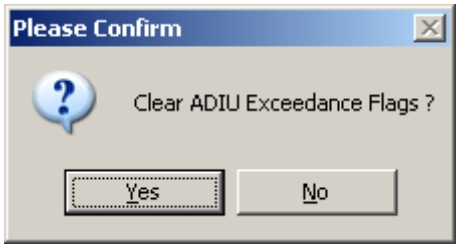
The third status pane will display one of the status messages as defined in section 4.1.

Note:

The NVM clear function will be inhibited by the adiu unless the ADIU Faults were previously downloaded per section 4.1.1

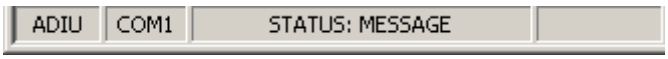
4.1.10 NVM Clear Exceedance Flags

The Exceedance Flags NVM clear function erases the records from memory. The function may be accessed by selecting the **Communication->Clear NVM->Exceedance Flags** menu item.



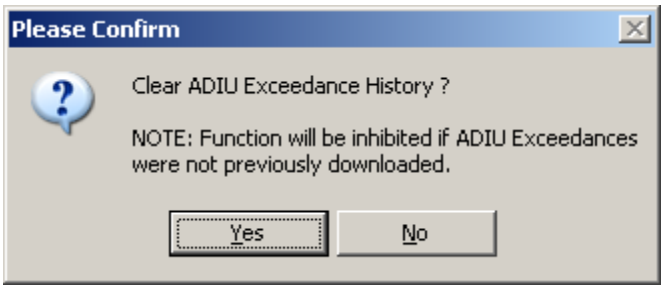
The confirmation message box is displayed. The **Yes** button will send the NVM clear command. The **No** button will cancel the clear operation.

The third status pane will display one of the status messages as defined in section 4.1.



4.1.11 NVM Clear Exceedance History

The Exceedance History NVM clear function marks the NVM records as erased from memory. The function may be accessed by selecting the **Communication->Clear NVM->Exceedance History** menu item.



The confirmation message box is displayed. The **Yes** button will send the NVM clear command. The **No** button will cancel the clear operation.

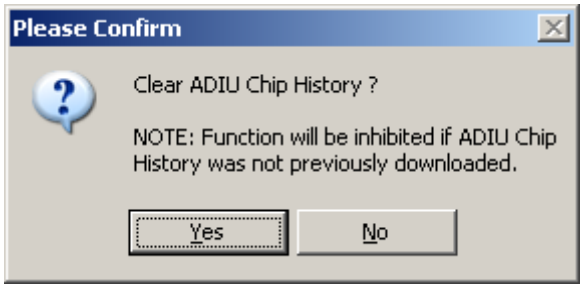
The third status pane will display one of the status messages as defined in section 4.1.

Note:

The NVM clear function will be inhibited by the adiu unless the Exceedance History was previously downloaded per section 4.1.2.

4.1.12 NVM Clear Chip History

The Chip History NVM clear function marks the NVM records as erased from memory. The function may be accessed by selecting the **Communication->Clear NVM->Chip History** menu item.



The confirmation message box is displayed. The **Yes** button will send the NVM clear command. The **No** button will cancel the clear operation.

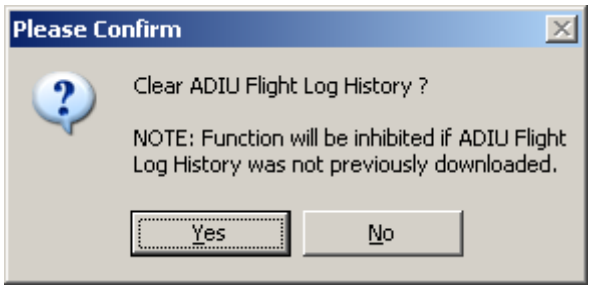
The third status pane will display one of the status messages as defined in section 4.1.

Note:

The NVM clear function will be inhibited by the adiu unless the Chip History was previously downloaded per section 4.1.3.

4.1.13 NVM Clear Flight Log History

The Flight Log History NVM clear function marks the NVM records as erased from memory. The function may be accessed by selecting the **Communication->Clear NVM->Flight Log History** menu item.



The confirmation message box is displayed. The **Yes** button will send the NVM clear command. The **No** button will cancel the clear operation.

The third status pane will display one of the status messages as defined in section 4.1.

Note:

The NVM clear function will be inhibited by the adiu unless the Flight Log History was previously downloaded per section 4.1.4.

4.1.14 NVM Clear Timers/Counters

The Aircraft Logs/Timers NVM clear function marks the NVM records as erased from memory. The function may be accessed by selecting the **Communication->Clear NVM->Timers/Counters** menu item.

The confirmation message box is displayed. The **Yes** button will send the NVM clear command. The **No** button will cancel the clear operation.

The third status pane will display one of the status messages as defined in section 4.1.

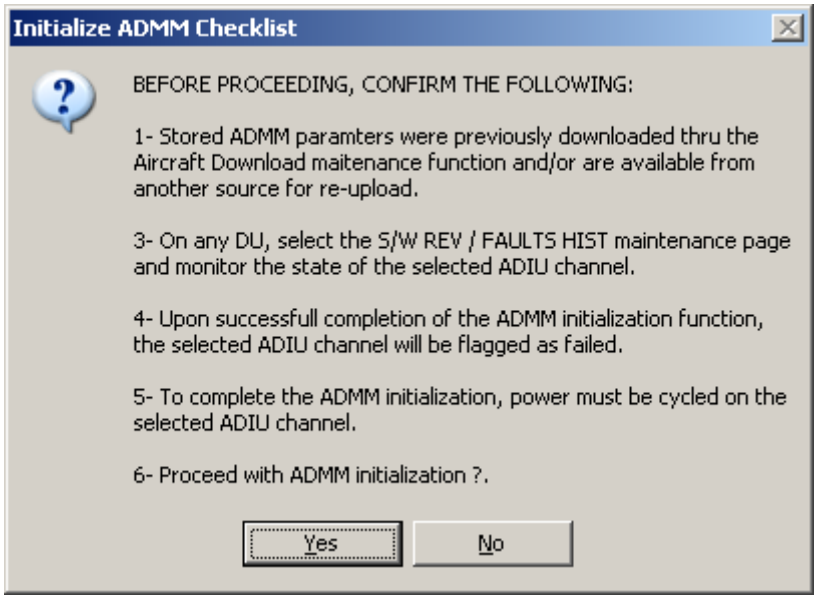
Note:

The Timers/Counters can be reprogrammed by means of an Aircraft Data Upload per section 4.1.8.

4.1.15 NVM Initialize ADMM

The ADMM NVM initialize function is used to zeroize the ADMM memory. The function may be accessed by selecting the **Communication->Clear NVM->Initialize ADMM** menu item.

When the option is selected, the initialize ADMM checklist message box is displayed. The message box details the required steps while using the initialize ADMM functions.



The **Yes** button will send the NVM initialize command. The **No** button will cancel the initialize operation.

The third status pane will display one of the status messages as defined in section 4.1.

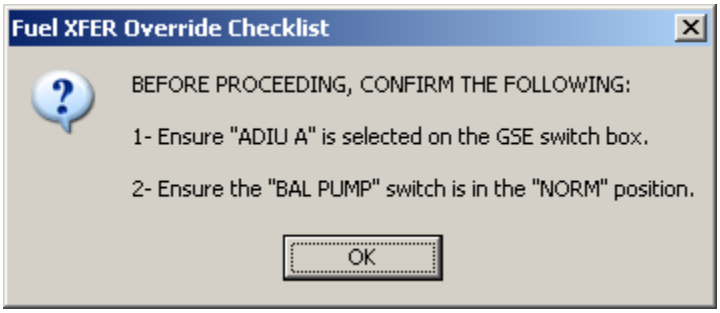
Note:

Following ADMM initialization, a POWER CYCLE is required. an Aircraft Data upload Per section 4.1.8 is ALSO required to ensure proper ADIU operation after maintenance interlock has been released.

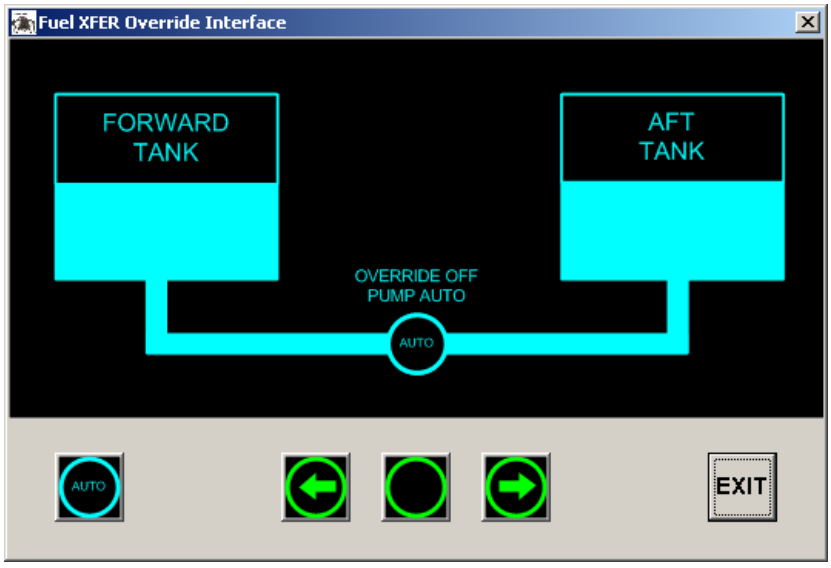
4.1.16 Fuel XFER Override

The Fuel XFER Override interface is used to provide force control of the fuel transfer pump and valve. The interface may be accessed by selecting the **Communication->Fuel XFER Override** menu item.

When the option is selected, the override checklist message box is displayed. The message box details the required setup to use the override functions.

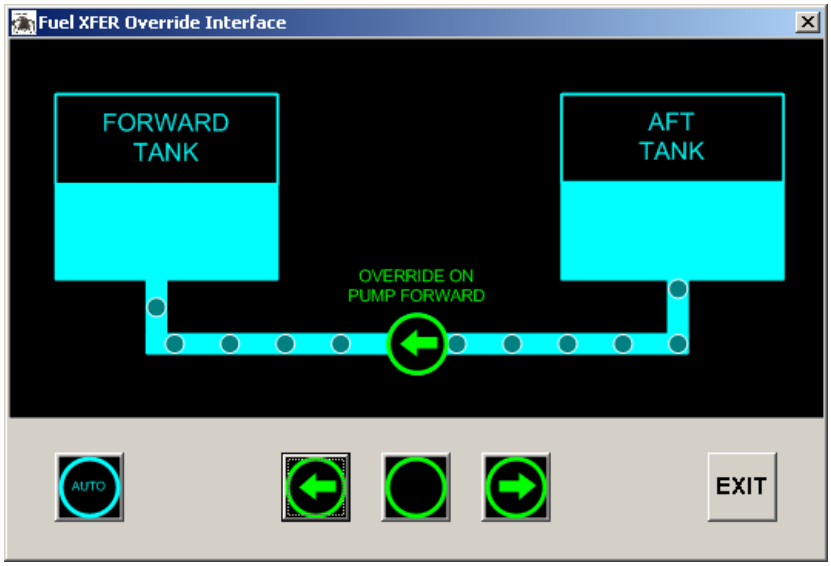


The override interface is composed of a schematic of the fuel tanks, fuel lines and fuel pump/valve state icon and description. The lower portion contains the available command buttons. The default interface is presented below.

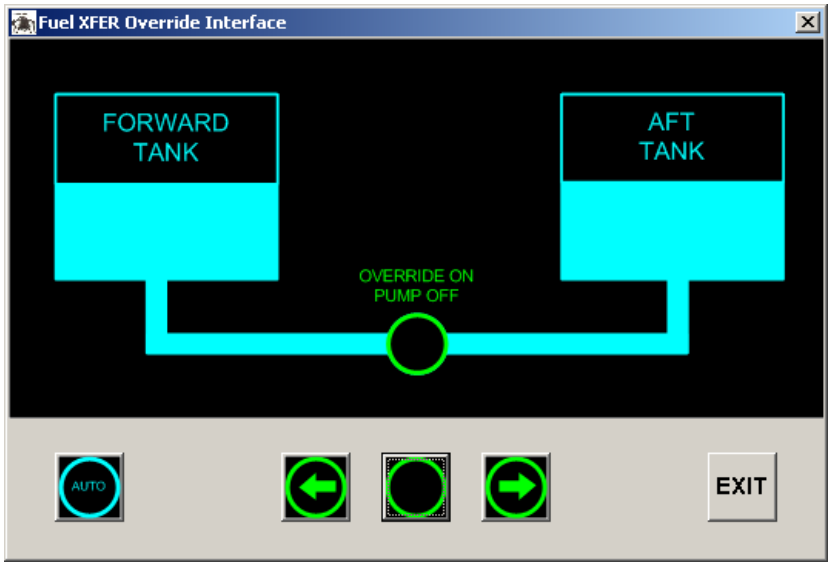


AUTO: clicking this button will return the ADIU in automatic fuel XFER mode, i.e., cancel any override modes. The automatic mode is indicated by the default schematic.

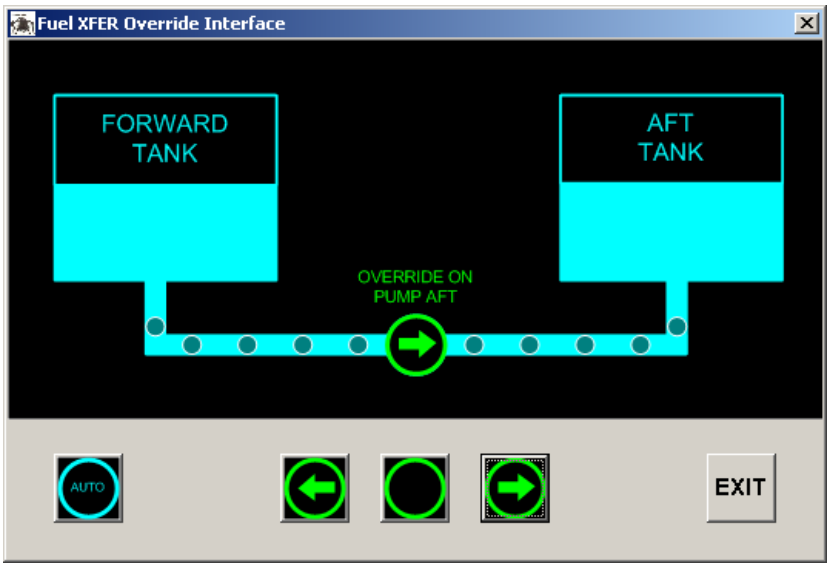
OVERRIDE PUMP FORWARD: clicking this button will force the pump/valve to transfer fuel towards the forward tank. The pump forward override is indicated by the pump forward icon and description and animated flow bubbles moving from the aft to the forward tank.



OVERRIDE PUMP OFF: clicking this button will force the pump/valve to close. The pump off override is indicated by the off icon and description and absence of flowing bubbles.



OVERRIDE PUMP AFT: clicking this button will force the pump/valve to transfer fuel towards the aft tank. The pump aft override is indicated by the pump aft icon and description and animated flow bubbles moving from the forward to the aft tank.



The **EXIT** button is used to leave the fuel XFER override interface. Prior to exiting, a Pump AUTO command is sent to return the ADIU to automatic operating mode.

In the event the ADIU does not confirm engagement of an override command, the Fuel XFER Override Interface screen remains unchanged and a message box is displayed to indicate the error (Pump Aft in the example below).

4.2 DU Maintenance Functions

There are up to three DUs installed on the model 429 helicopter. DU selection is done via the GSE switch box. DU maintenance functions include:

Download Functions

- Download EDR Data (section 4.2.1)
- Download DU Faults (section 4.2.2)

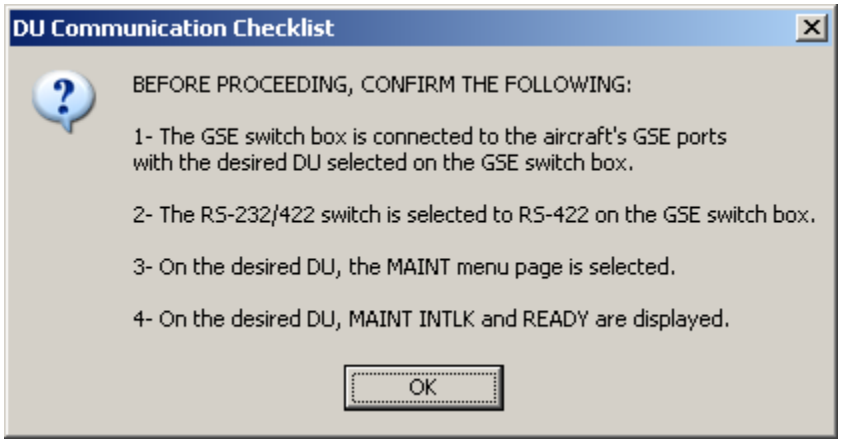
Upload Functions

- Upload EDR Data Mask (section 4.2.3)
- Upload Normal Checklist (section 4.2.4)
- Upload Emergency Checklist (section 4.2.5)
- Upload Programmable CAS (section 4.2.6)

NVM Clear Functions

- NVM Clear DU Faults (section 4.2.7)
- NVM Clear Normal Checklist (section 4.2.8)
- NVM Clear Emergency Checklist (section 4.2.9)
- NVM Clear Programmable CAS (section 4.2.10)

When the DU is selected as the desired system (**Select System->DU**) and the communication port is configured (**Select Port->COMX**), the DU's communication checklist message box is displayed. The message box details the required setup to interface with the DU's maintenance functions.



After the setup is completed and the message box is closed, the DU's maintenance functions may be accessed through the **Communication** drop down menu.

After performing a maintenance function, the third status pane will report one of the following status messages:

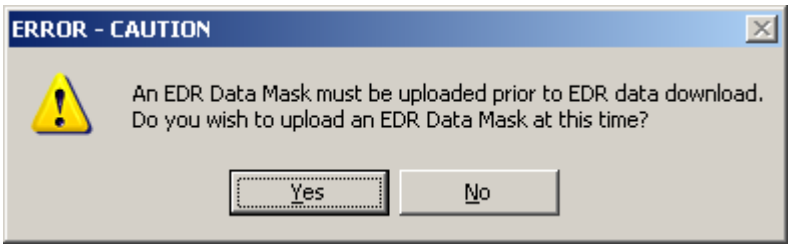
STATUS MESSAGE	DESCRIPTION	SOURCE
STATUS: VERIFY ON DU	Status messages should be verified on the DU's Maintenance page (see next table)	DMITS429
STATUS: UPLD ABORTED	Upload function was aborted using the **Abort** Toolbar button	DMITS429
STATUS: DNLD ABORTED	Download function was aborted using the **Abort** Toolbar button	DMITS429
STATUS: NVM CLEAR CANCELLED	Memory clear was cancelled by selecting **No** on the confirmation message box	DMITS429

Status message displayed on the DU's Maintenance page may be one of the following:

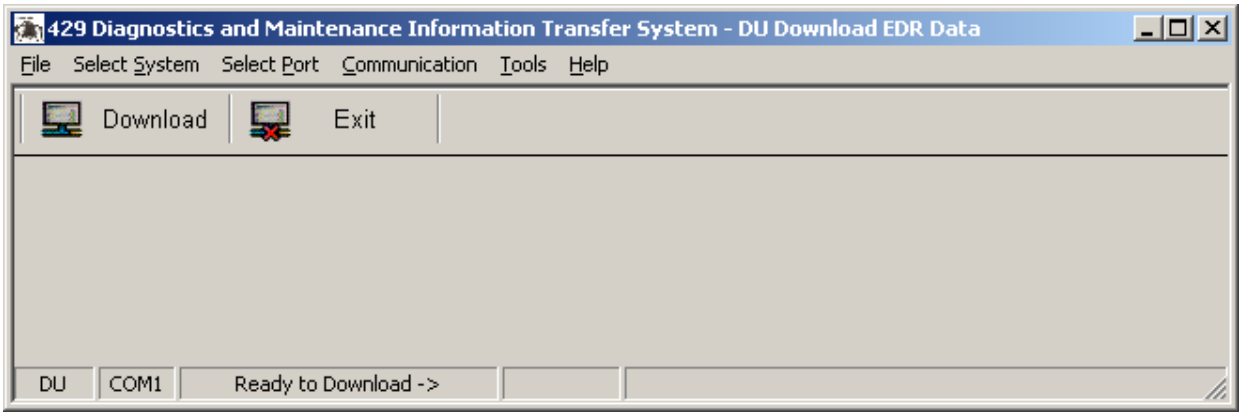
STATUS MESSAGE	DESCRIPTION	COLOR
READY	Ready to accept maintenance bus commands	Green
UPLOADING	Upload in progress	White
DNLOADING	Download in progress	White
CLEARING	NVM clearing in progress	White
UPLD COMPLETE	Upload complete	Green
DNLD COMPLETE	Download complete	Green
CLEAR COMPLETE	NVM clear complete	Green
CRC ERROR	CRC mismatch error	Yellow
INVALID CMD	Command sequence not recognized	Yellow
CLR NOT ALLOWED	Receipt of inhibited clear command	Yellow
UPLOAD ERROR	Parity or format error in uploaded data	Yellow

4.2.1 Download EDR Data

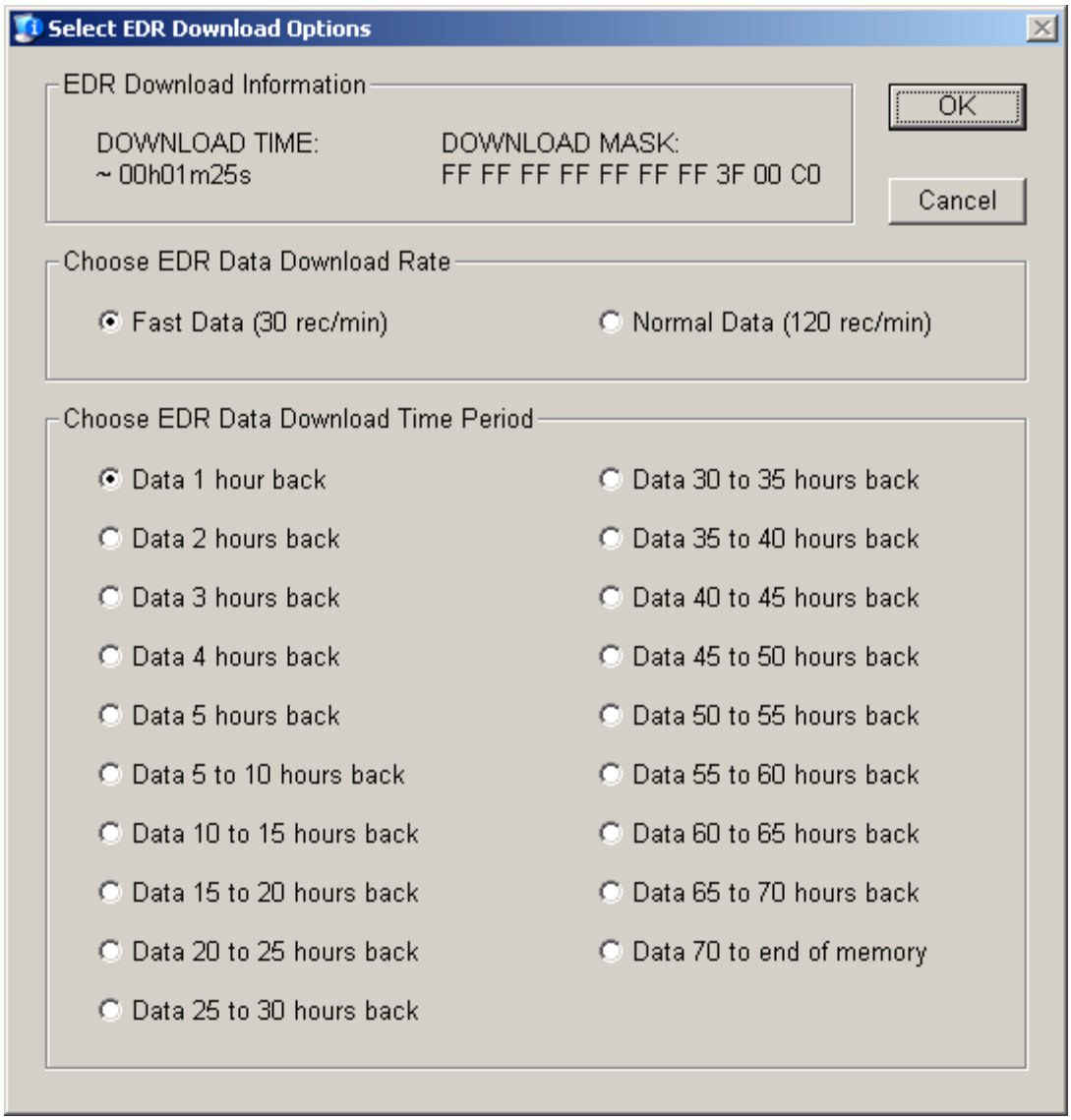
An EDR Data Mask must be uploaded prior to downloading EDR Data (see section 4.2.3 for details). If no EDR Data Mask has been uploaded, a message box is displayed when the EDR Data download function is selected. Selecting **Yes** will open the EDR Data Mask upload function interface.



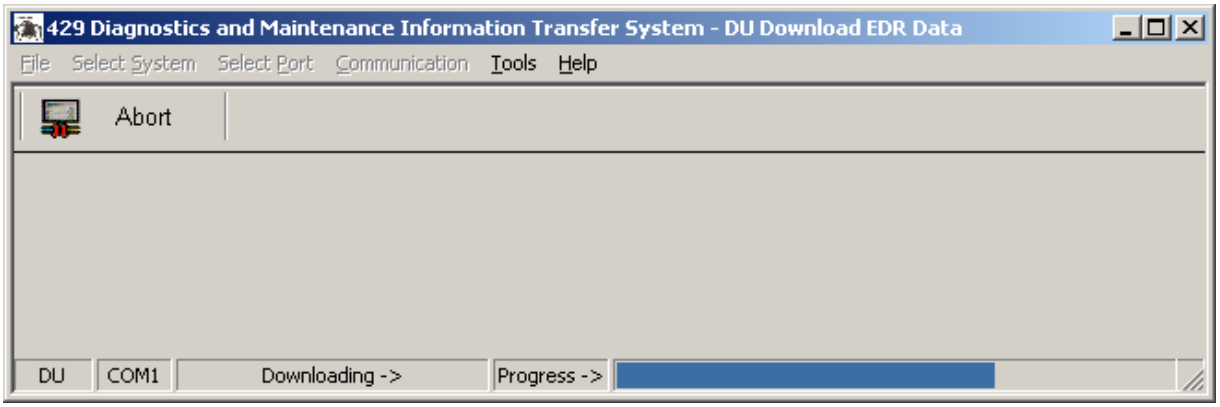
The EDR Data download function downloads the binary data recorded in EDR memory. The number of the records to be downloaded will depend on the uploaded EDR Data Mask, the selected download rate and the selected download time period. The function may be accessed by selecting the **Communication->Download Data->EDR Data** menu item.



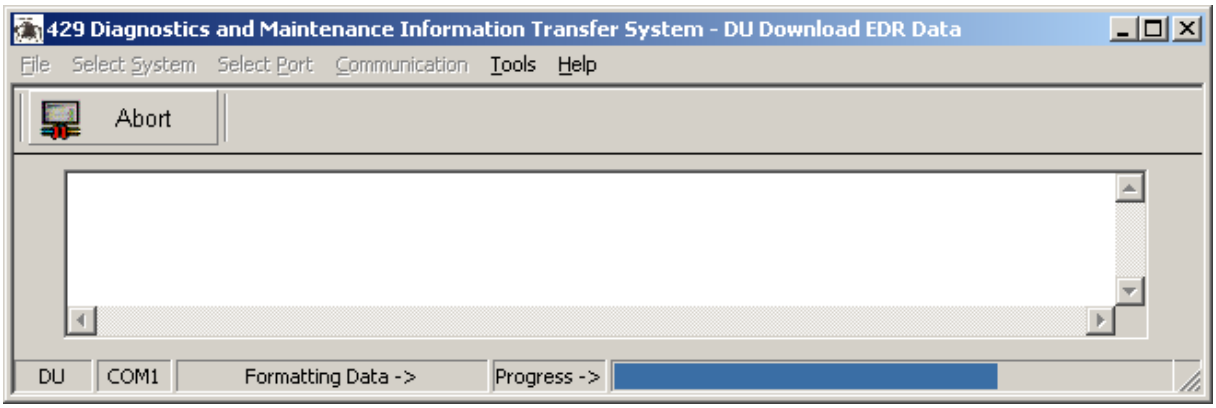
The **Download** button will open the download rate and the download time period selection dialog box. Default options are set to **Fast Data (30 rec/min)** and **Data 1 hour back**. The user may change selection by clicking on the radio buttons. The **EDR Download Information** section shows approximate download time based on user parameter selection and uploaded EDR data mask.



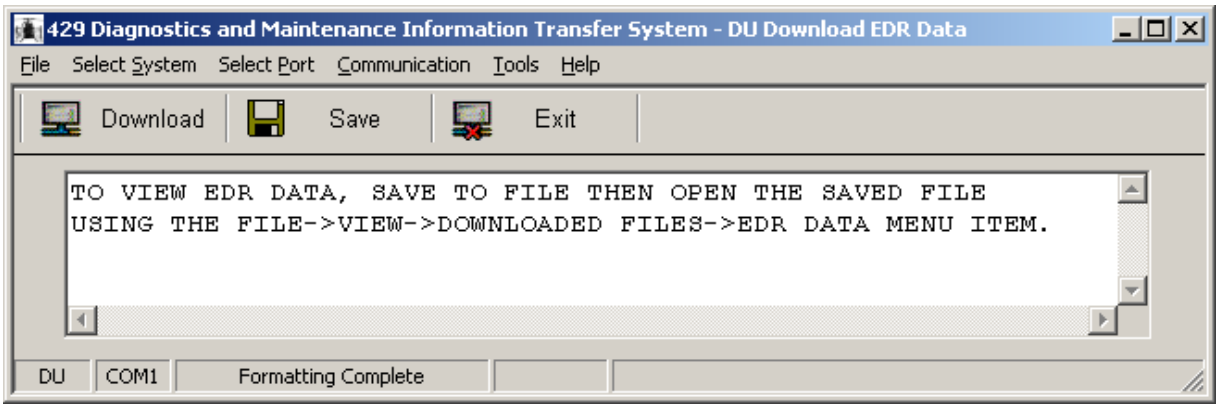
Once the download parameters are selected, pressing the **OK** button will launch the download process. While data is being downloaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the download process. A progress bar is displayed in the fifth status pane to indicate download progress.



When download is completed, the binary data is translated and formatted. A progress bar is displayed in the fifth status pane to indicate formatting progress.

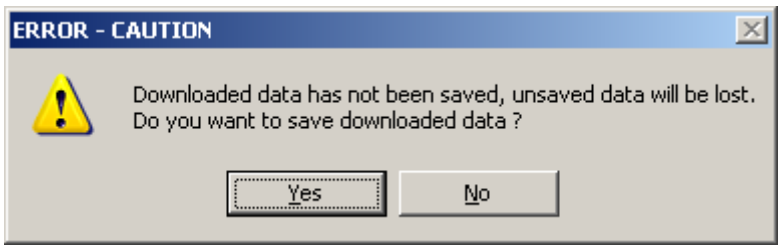


Once the formatting process concludes, a message is displayed in the viewing window and the **Save** button is added to the toolbar. Formatted downloaded EDR data is too large to be effectively viewed in the viewing window; it is best viewed in Microsoft Excel.



The **Save** toolbar button is used to save the formatted downloaded data. The **Save** toolbar button will open the Save File Dialog Box, which lets the user specify the drive, directory, and name of the file to save. The Save File Dialog Box will apply the function's file extension mask (*.csv) and will default to the {root}\DU\EDR Data\ folder. When saved, the filename will be displayed in the fifth status pane.

If data was successful downloaded but not subsequently saved, attempting to exit the DU EDR Data download function will display the unsaved data error message box:



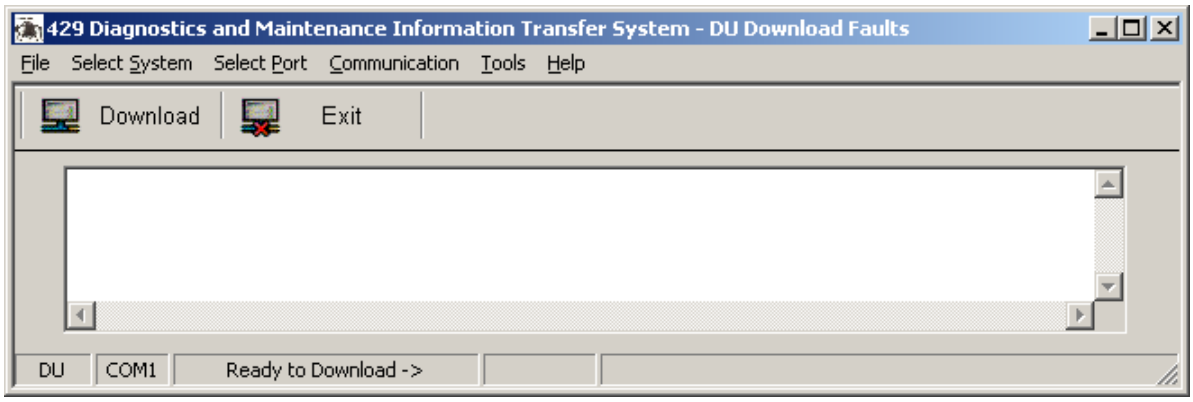
Selecting **Yes** will let the user save the downloaded data before exiting the DU EDR Data download function. Selecting **No** will exit the DU EDR Data download function without saving the downloaded data.

Doing one of the following will exit the DU EDR Data download function and close (or reset) the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Close** button

4.2.2 Download DU Faults

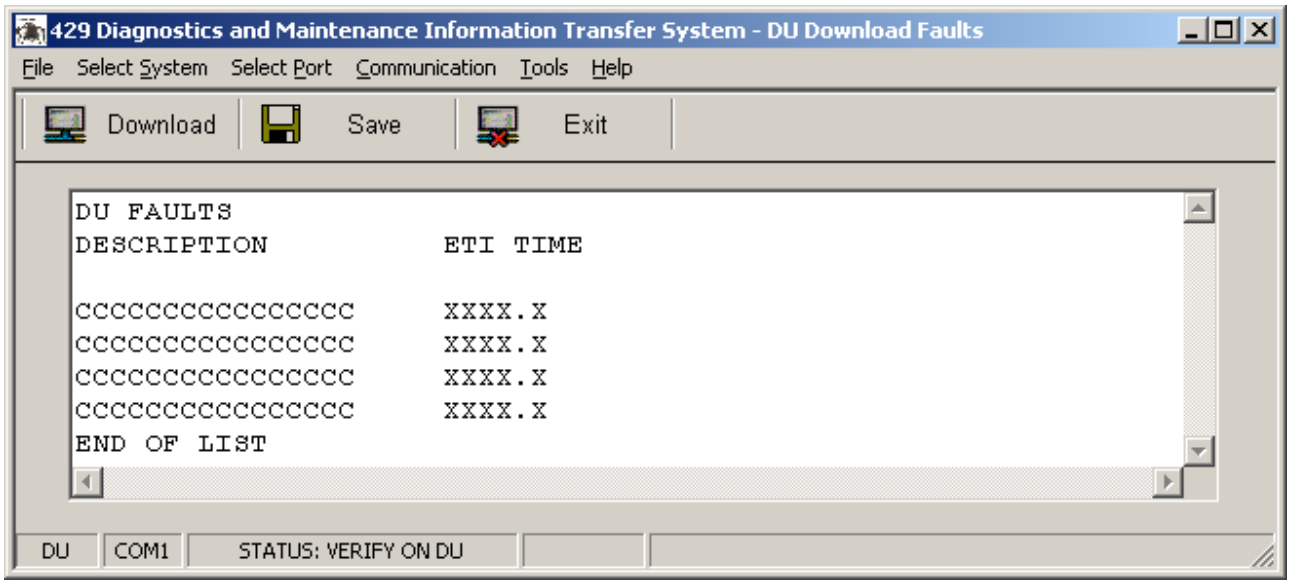
The DU Fault download function downloads the fault flag from the DU. The number of the records to be downloaded will depend on the data recorded in memory. The function may be accessed by selecting the **Communication->Download Data->DU Faults** menu item.



The **Download** button will launch the download process.

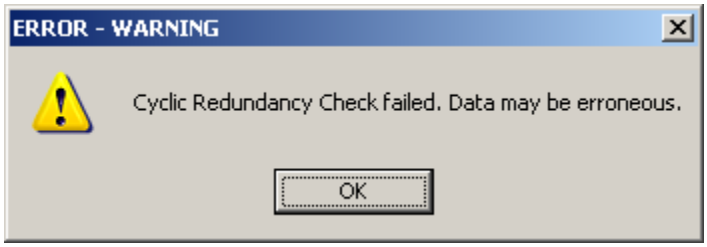
While data is being downloaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the download process.

When the data is successful downloaded, the data is displayed in the viewing window and the **Save** button is added to the toolbar. The third status pane will display one of the status messages as defined in section 4.2.



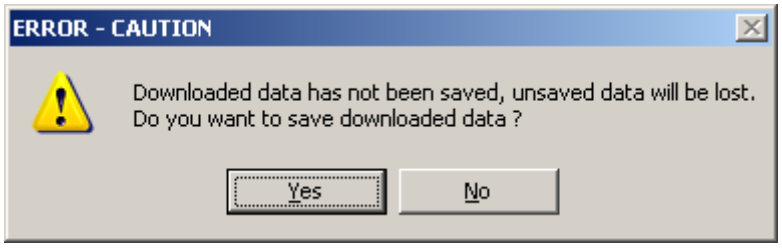
"C" indicates an ASCII character and "X" indicates a numeric character "0" thru "9".

When a CRC error is detected, the data is displayed in the viewing window, the **Save** button is added to the toolbar and the CRC error message box is displayed.



The **Save** toolbar button is used to save the downloaded data. The **Save** toolbar button will open the Save File Dialog Box, which lets the user specify the drive, directory, and name of the file to save. The Save File Dialog Box will apply the function's file extension mask (*.ddf) and will default to the {root}\DU\DU Faults\ folder. When saved, the filename will be displayed in the fifth status pane.

If data was successful downloaded but not subsequently saved, attempting to exit the DU Faults download function will display the unsaved data error message box:



Selecting **Yes** will let the user save the downloaded data before exiting the DU Faults download function. Selecting **No** will exit the DU Faults download function without saving the downloaded data.

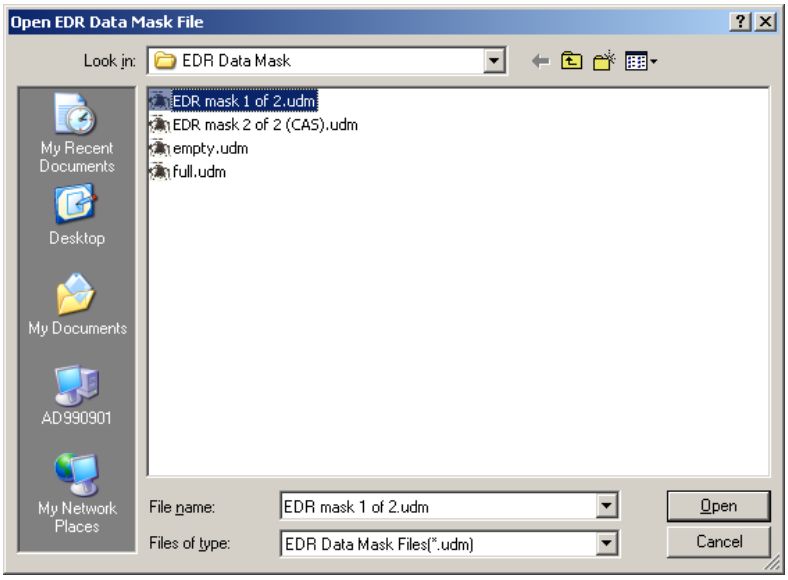
Doing one of the following will exit the DU Faults download function and close (or reset) the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Close** button

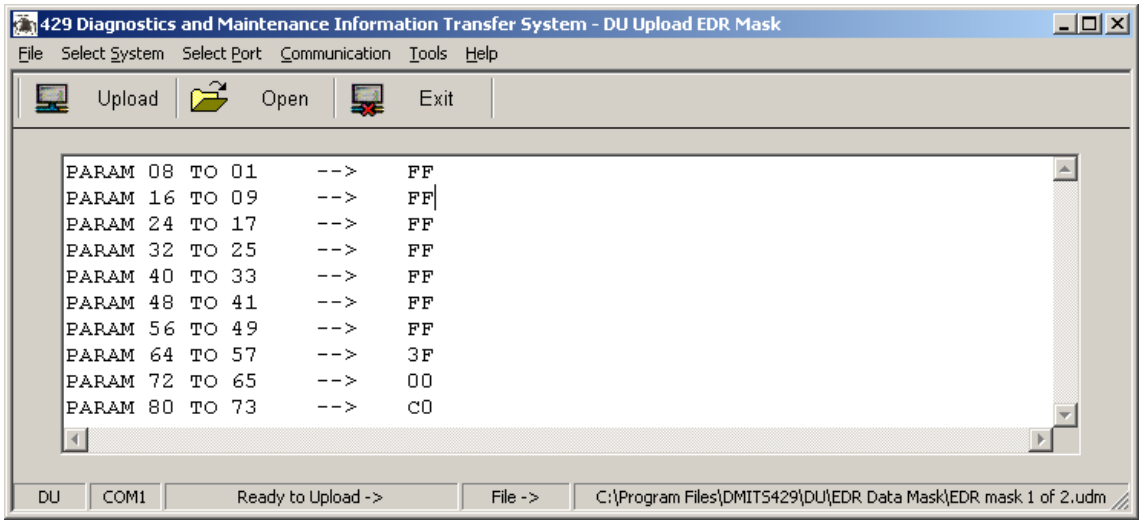
4.2.3 Upload EDR Data Mask

The EDR Data Mask upload function stores a bit mask in DU RAM that is used to select which parameters to include in the EDR Data download (section 4.2.1). The function may be accessed by selecting the **Communication->Upload Data->EDR Data Mask** menu item.

When selected, the Open File Dialog Box is displayed, which lets the user specify the drive, directory, and name of the file to open. The Open File Dialog Box will apply the function's file extension mask (*.udm) and will default to the {root}\DU\EDR Data Mask\ folder.

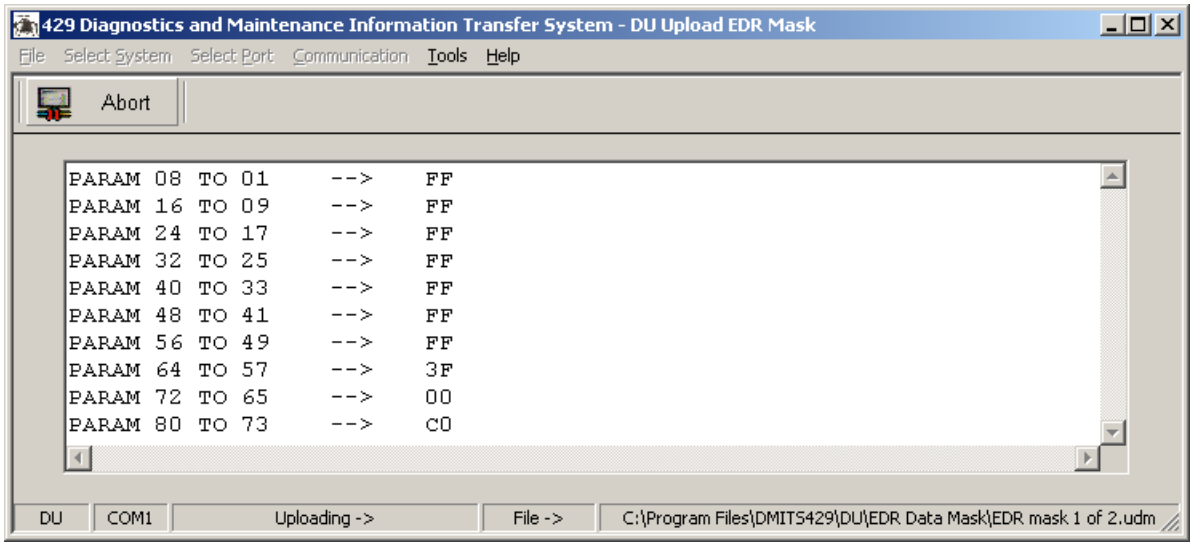


When opened, the file is displayed in the viewing window and the filename is displayed in the fifth status pane.

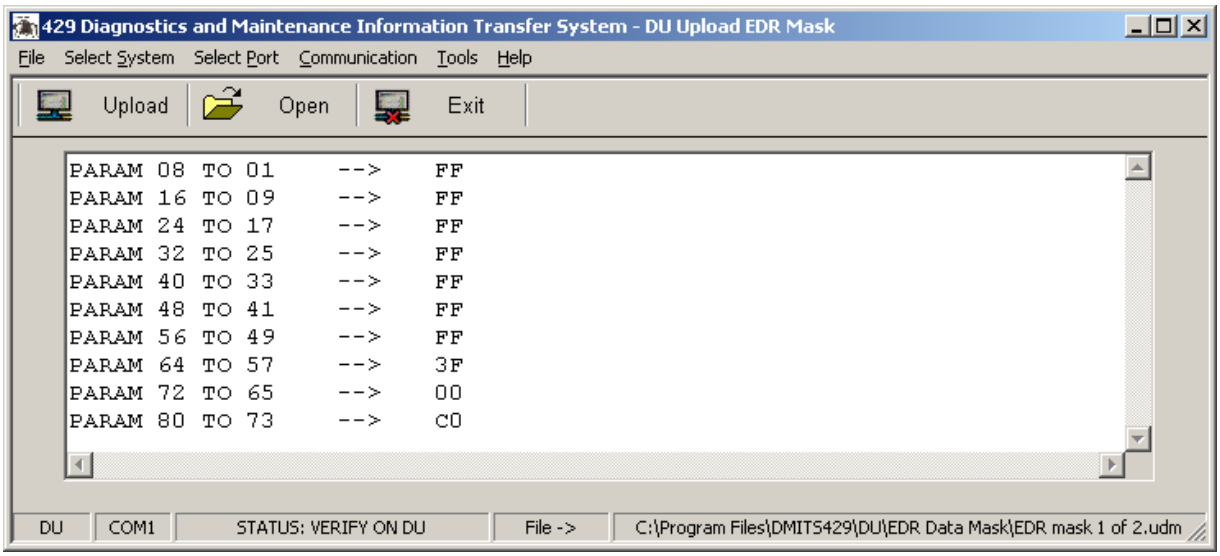


Pressing the **Open** button will display the Open File Dialog Box, at which point a different file may be selected for upload.

The **Upload** button will launch the upload process. While data is being uploaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the upload process.



When data is uploaded, the toolbar regains its original buttons and the third status pane will display one of the status messages as defined in section 4.2.



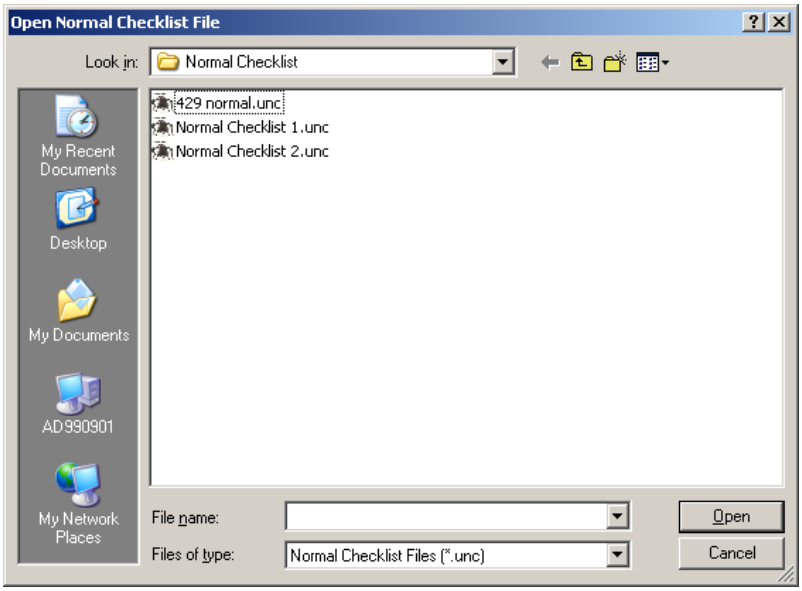
Doing one of the following will exit the DU EDR Data Mask upload function and close the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Open** button and closing the Open File Dialog Box without selecting another file for upload
- Pressing the toolbar's **Close** button

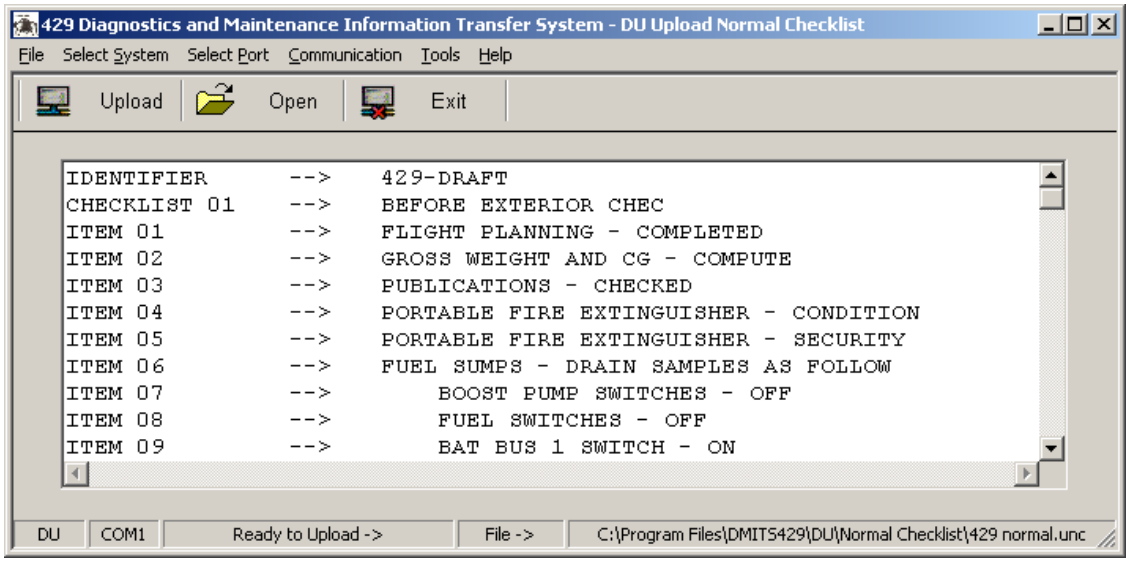
4.2.4 Upload Normal Checklist

The Normal Checklist upload function stores Normal Checklist data in NVM. The function may be accessed by selecting the **Communication->Upload Data->Normal Checklist** menu item.

When selected, the Open File Dialog Box is displayed, which lets the user specify the drive, directory, and name of the file to open. The Open File Dialog Box will apply the function's file extension mask (*.unc) and will default to the {root}\DU\Normal Checklist\ folder.

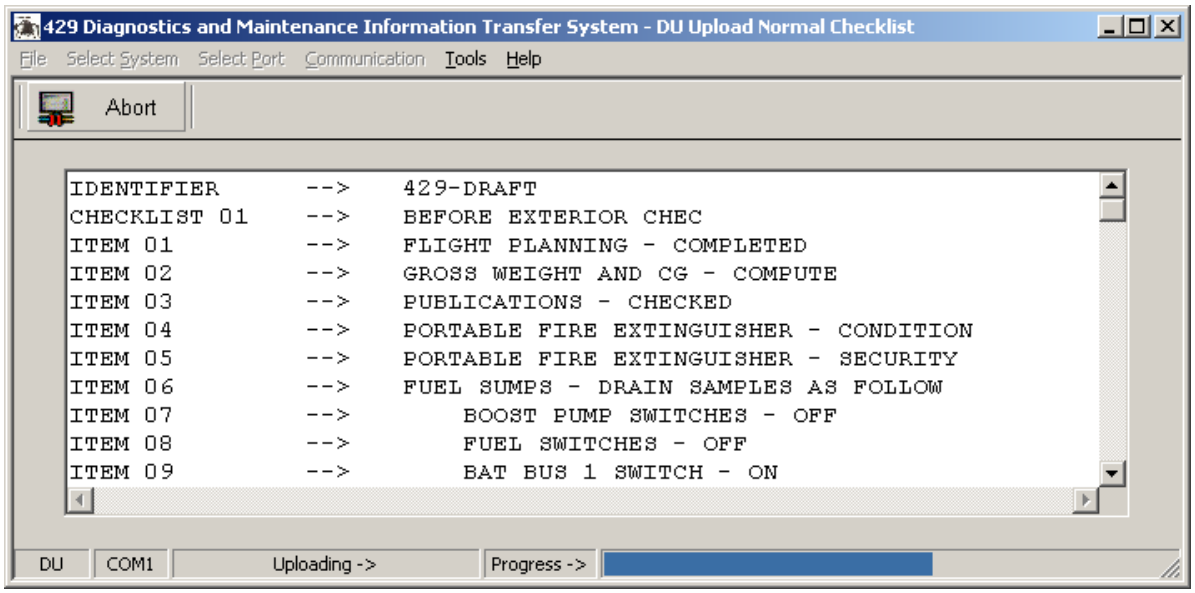


When opened, the file is displayed in the viewing window and the filename is displayed in the fifth status pane.

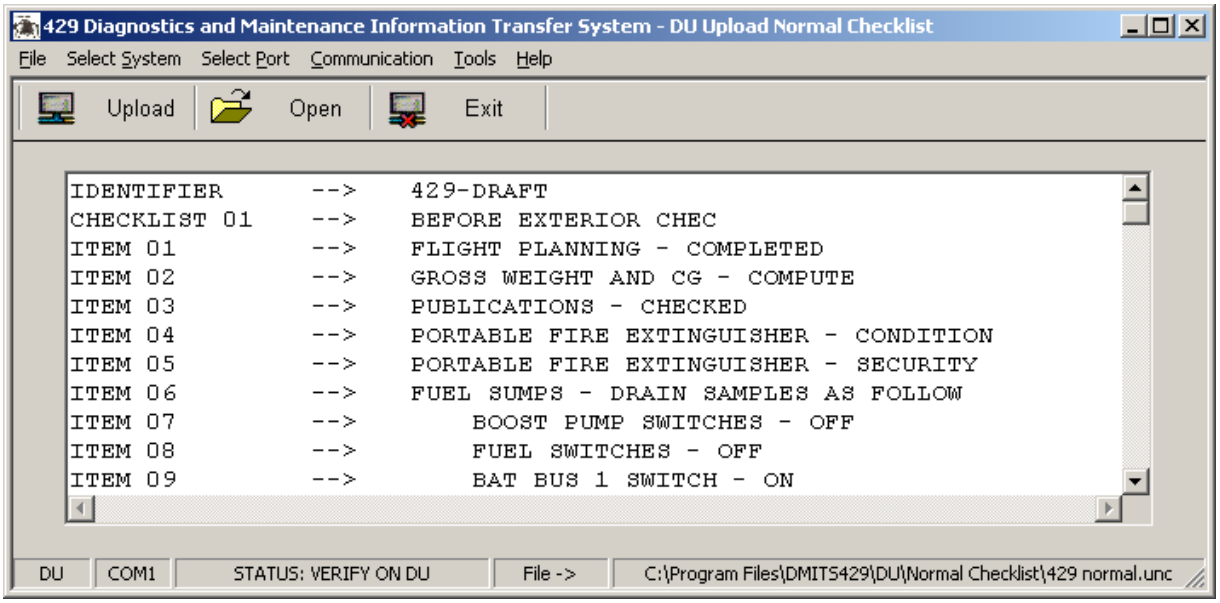


Pressing the Open button will display the Open File Dialog Box, at which point a different file may be selected for upload.

The Upload button will launch the upload process. While data is being uploaded, the File, Select System, Select Port and the Communication drop down menus are deactivated. The fifth status pane is used to display an upload progress bar. The toolbar buttons are modified and the Abort button is displayed; pressing this button will terminate the upload process.



When data is uploaded, the toolbar regains its original buttons and the third status pane will display one of the status messages as defined in section 4.2.



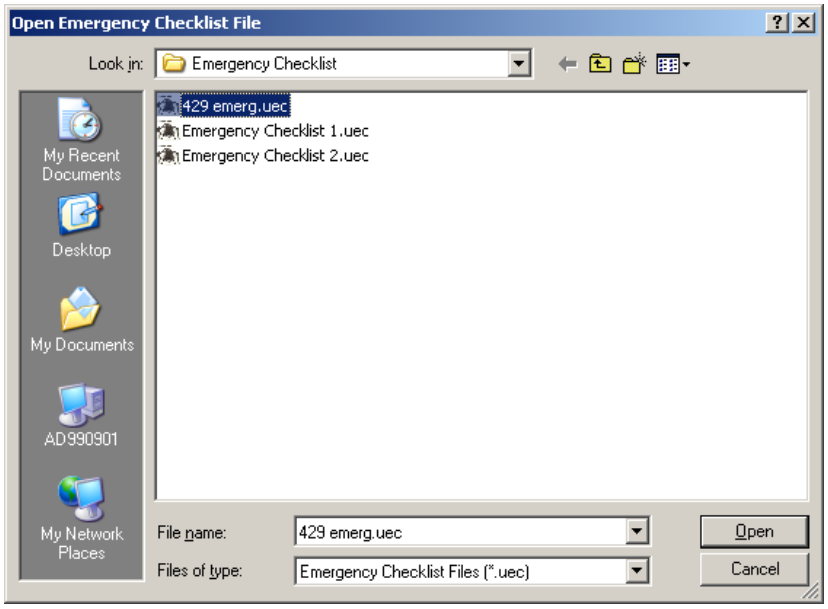
Doing one of the following will exit the DU Normal Checklist upload function and close the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Open** button and closing the Open File Dialog Box without selecting another file for upload
- Pressing the toolbar's **Close** button

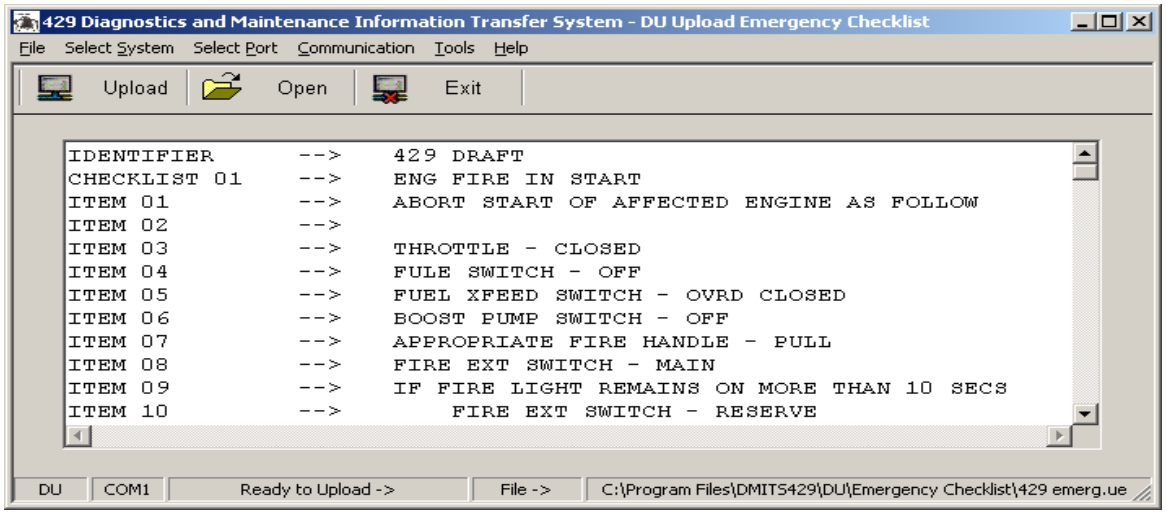
4.2.5 Upload Emergency Checklist

The Emergency Checklist upload function stores Emergency Checklist data in NVM. The function may be accessed by selecting the **Communication->Upload Data->Emergency Checklist** menu item.

When selected, the Open File Dialog Box is displayed, which lets the user specify the drive, directory, and name of the file to open. The Open File Dialog Box will apply the function's file extension mask (*.uec) and will default to the {root}\DU\Emergency Checklist\ folder.

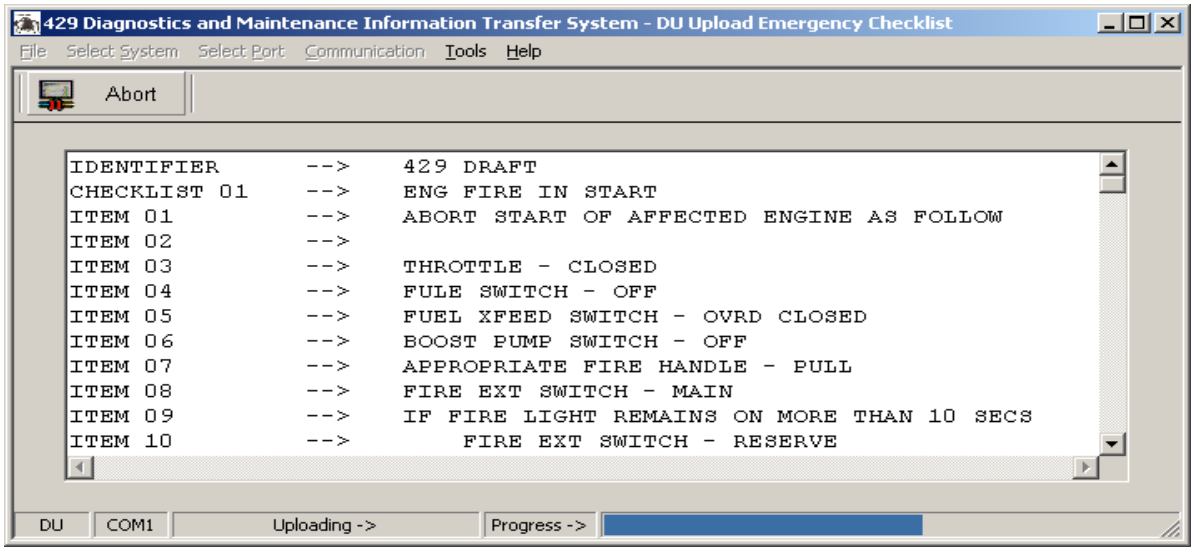


When opened, the file is displayed in the viewing window and the filename is displayed in the fifth status pane.

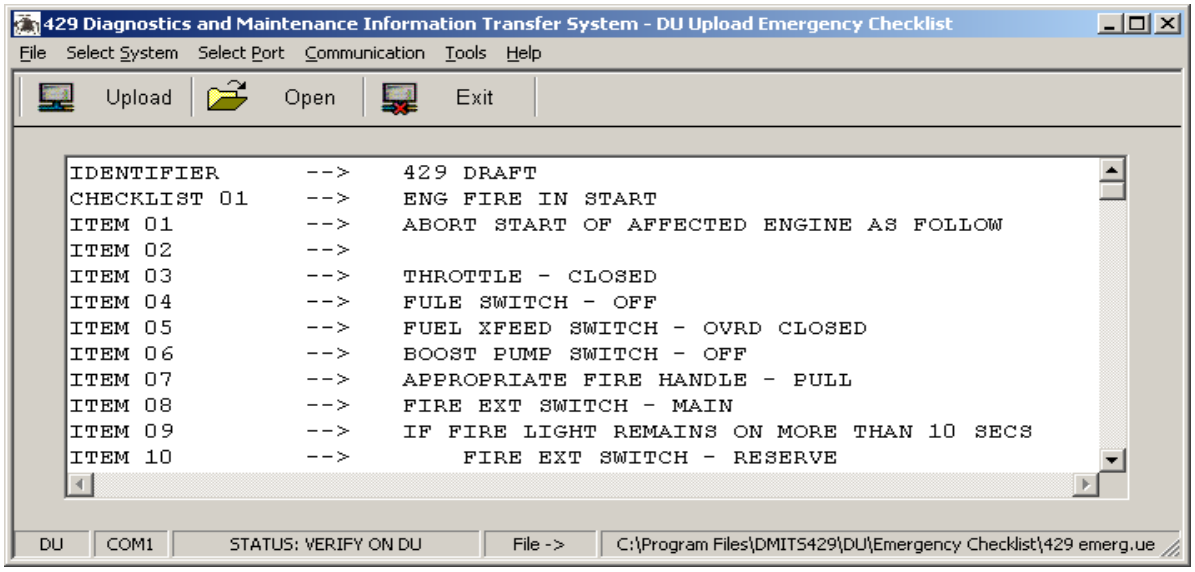


Pressing the **Open** button will display the Open File Dialog Box, at which point a different file may be selected for upload.

The **Upload** button will launch the upload process. While data is being uploaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The fifth status pane is used to display an upload progress bar. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the upload process.



When data is uploaded, the toolbar regains its original buttons and the third status pane will display one of the status messages as defined in section 4.2.



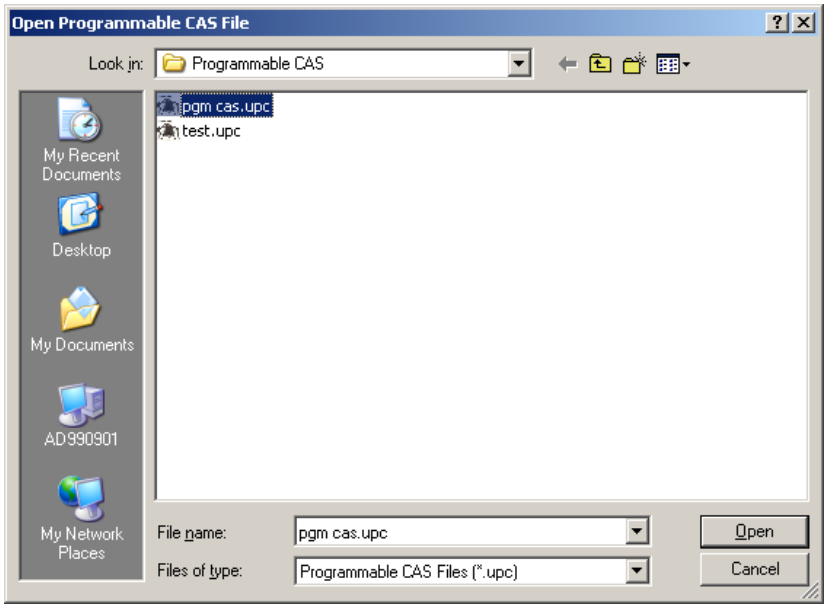
Doing one of the following will exit the DU Emergency Checklist upload function and close the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Open** button and closing the Open File Dialog Box without selecting another file for upload
- Pressing the toolbar's **Close** button

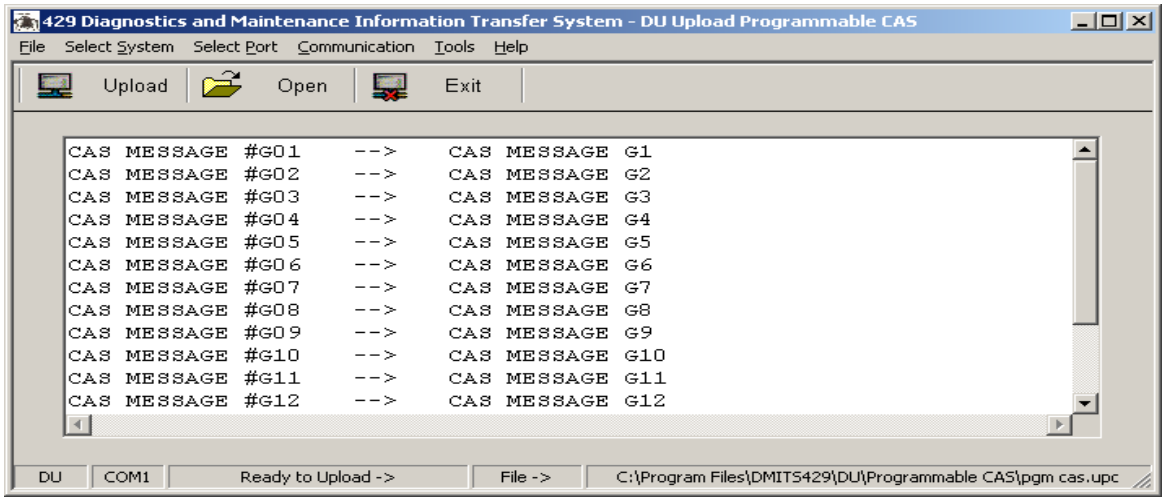
4.2.6 Upload Programmable CAS

The Programmable CAS upload function stores a listing of CAS data in NVM. The function may be accessed by selecting the **Communication->Upload Data-> Programmable CAS** menu item and then entering the DMITS password in the password caption dialog box.

After the DMITS password is validated, the Open File Dialog Box is displayed which lets the user specify the drive, directory, and name of the file to open. The Open File Dialog Box will apply the function's file extension mask (*.upc) and will default to the {root}\DU\Programmable CAS\ folder.

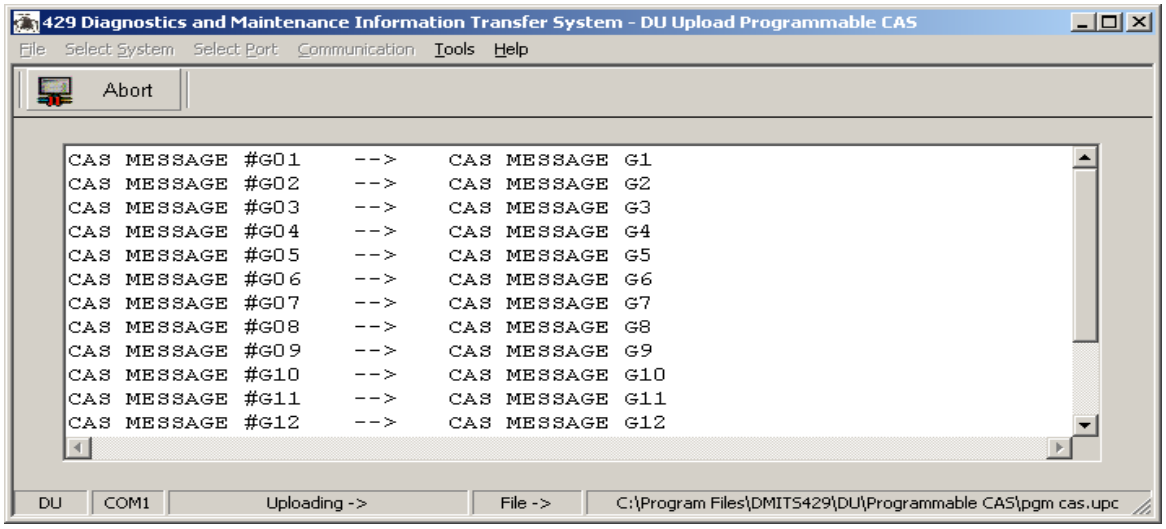


When opened, the file is displayed in the viewing window and the filename is displayed in the fifth status pane.

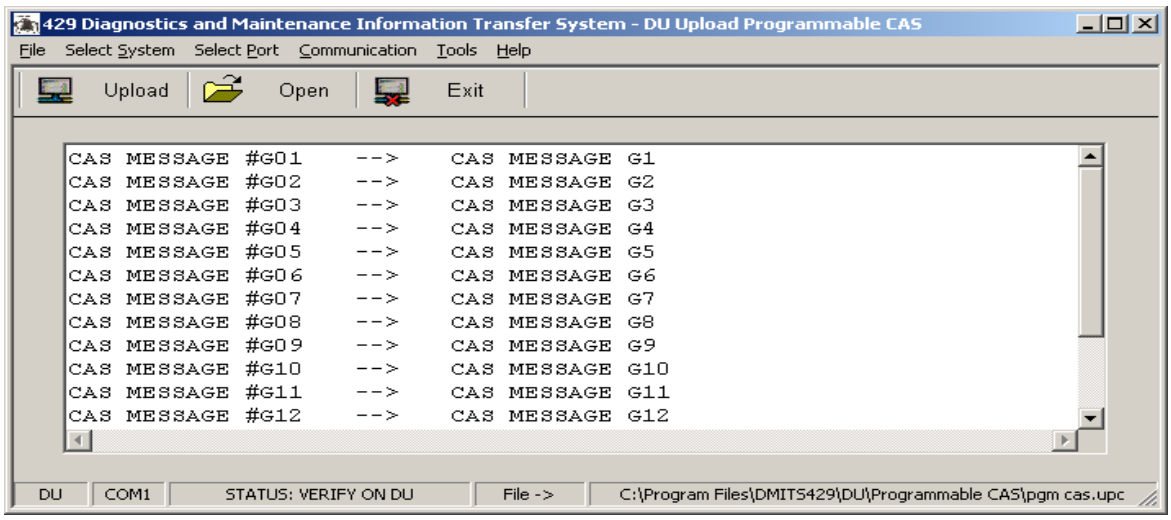


Pressing the **Open** button will display the Open File Dialog Box, at which point a different file may be selected for upload.

The **Upload** button will launch the upload process. While data is being uploaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the upload process.



When data is uploaded, the toolbar regains its original buttons and the third status pane will display one of the status messages as defined in section 4.2.

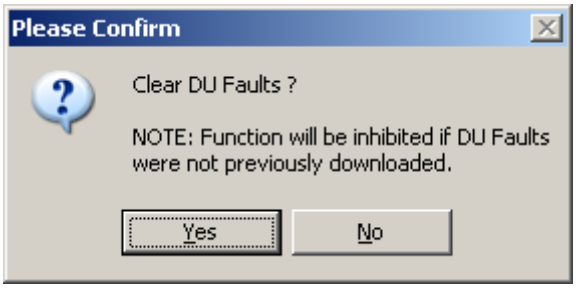


Doing one of the following will exit the DU Programmable CAS upload function and close the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Open** button and closing the Open File Dialog Box without selecting another file for upload
- Pressing the toolbar's **Close** button

4.2.7 NVM Clear DU Faults

The DU Fault NVM clear function erases the fault flag records from memory. The function may be accessed by selecting the **Communication->Clear NVM->DU Faults** menu item.



The confirmation message box is displayed. The **Yes** button will send the NVM clear command. The **No** button will cancel the clear operation.

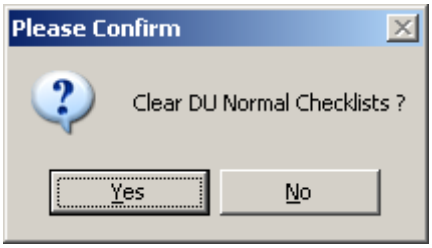
The third status pane will display one of the status messages as defined in section 4.2.

Note:

The NVM clear function will be inhibited by the du unless the DU Faults were previously downloaded per section 4.2.2.

4.2.8 NVM Clear Normal Checklist

The Normal Checklist NVM clear function erases the checklist records from memory. The function may be accessed by selecting the **Communication->Clear NVM->Normal Checklist** menu item.

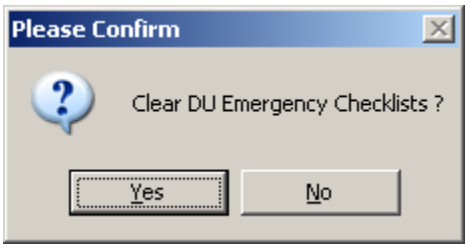


The confirmation message box is displayed. The **Yes** button will send the NVM clear command. The **No** button will cancel the clear operation.

The third status pane will display one of the status messages as defined in section 4.2.

4.2.9 NVM Clear Emergency Checklist

The Emergency Checklist NVM clear function erases the checklist records from memory. The function may be accessed by selecting the **Communication->Clear NVM->Emergency Checklist** menu item.



The confirmation message box is displayed. The **Yes** button will send the NVM clear command. The **No** button will cancel the clear operation.

The third status pane will display one of the status messages as defined in section 4.2.

4.2.10 NVM Clear Progrmmable CAS

The Programmable CAS NVM clear function erases the CAS messages from memory. The function may be accessed by selecting the **Communication->Clear NVM-> Programmable CAS** menu item and then entering the DMITS password in the password caption dialog box.

The confirmation message box is displayed after the DMITS password is validated. The **Yes** button will send the NVM clear command. The **No** button will cancel the clear operation.

The third status pane will display one of the status messages as defined in section 4.2.

4.3 FCC Maintenance Functions

There are two FCC installed on the model 429 helicopter. FCC selection is done via the GSE switch box. FCC maintenance functions include:

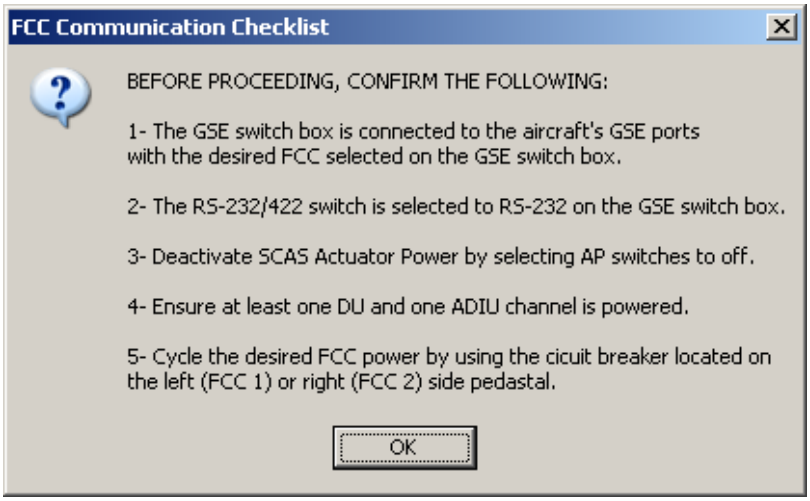
Download Functions

- Download FCC Faults/Events (section 4.3.1)
- Download Rigging Data (section 4.3.2)

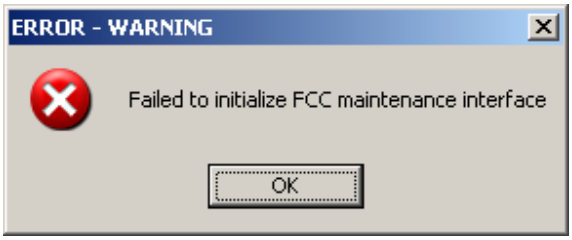
NVM Clear Functions

- NVM Clear FCC Faults/Events (section 4.3.3)
- NVM Clear Rigging Data (section 4.3.4)

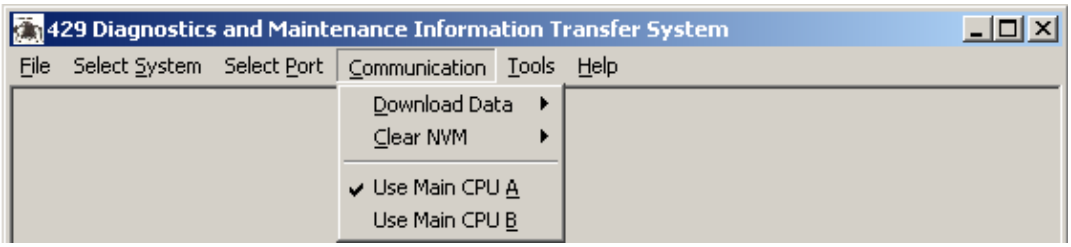
When the FCC is selected as the desired system (**Select System->FCC**) and the communication port is configured (**Select Port->COMX**), the FCC's communication checklist message box is displayed. The message box details the required setup to interface with the FCC's maintenance functions.



After the setup is completed and the checklist message box is closed, the communication interface with the FCC is initialized and the third status pane displays **Initializing FCC interface…**. If the initialization fails, a message box is displayed and the FCC is removed as the currently selected system.



Once the communication protocol is initialized, the FCC's maintenance functions may be accessed through the **Communication** drop down menu.



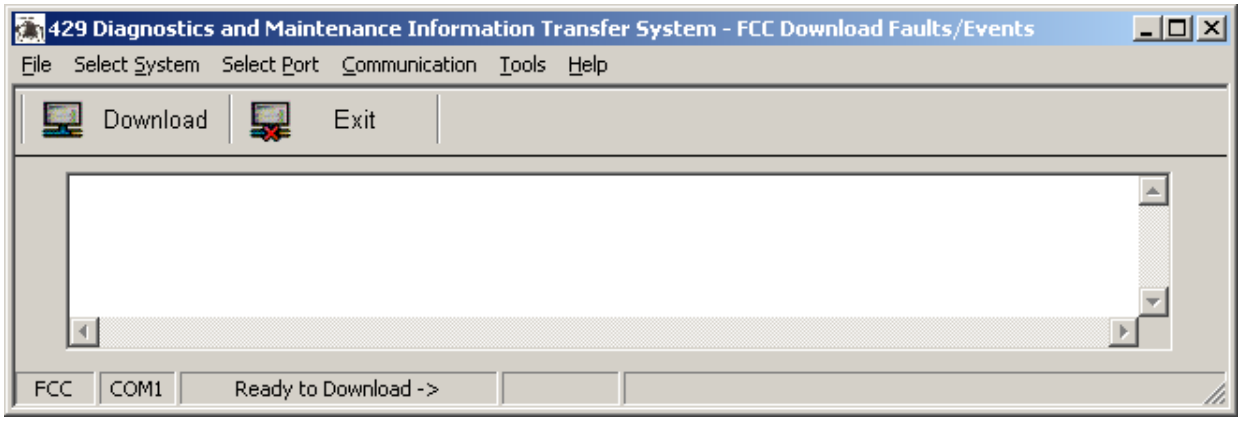
FCC maintenance functions may be processed by either one of the two FCC processors. The processor to use during the maintenance functions is set in the **Communication** drop down menu and indicated by a check mark.

After performing a maintenance function, the third status pane will report one of the following status messages:

STATUS MESSAGE	DESCRIPTION	SOURCE
STATUS: READY	Receipt of CR with no command	FCC
STATUS: CLEAR COMPLETE	Successful completion of Clear command	FCC
STATUS: CLR NOT ALLOWED	Receipt of inhibited clear command	FCC
STATUS: INVALID CMD	Receipt of invalid command sequence	FCC
STATUS: ERROR - NO FEEDBACK	No feedback from FCC after using a clear command	DMITS429
STATUS: DNLD COMPLETE	Download function has completed	DMITS429
STATUS: ERROR - NO DATA	Download function has failed, no data was received from the FCC	DMITS429
STATUS: DNLD ABORTED	Download function was aborted using the **Abort** Toolbar button	DMITS429
STATUS: NVM CLEAR CANCELLED	Memory clear was cancelled by selecting **No** on the confirmation message box	DMITS429

4.3.1 Download FCC Faults/Events

The FCC Faults/Events download function downloads the faults and events from the FCC. The number of the records to be downloaded will depend on the data recorded in memory. The function may be accessed by selecting the **Communication->Download Data->FCC Faults/Events** menu item.



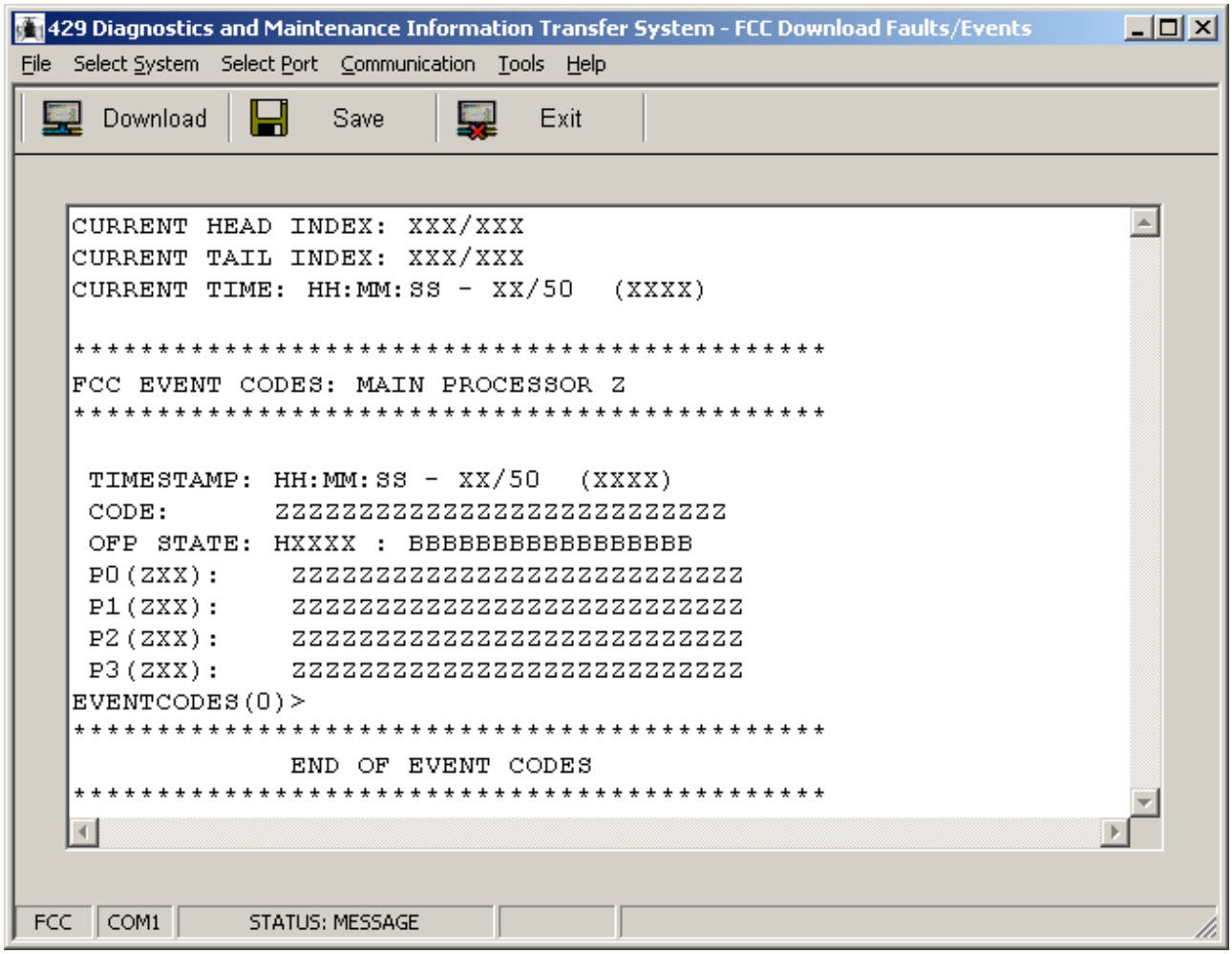
The **Download** button will launch the download process.

While data is being downloaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the download process but will require reinitializing the FCC maintenance interface (per section 4.3).

Note:

This function might require a long time to complete. if the third status pane still indicates **downloading ->** after 5 seconds, the download is underway and the function should be allowed to complete (to avoid reinitializing the FCC maintenance interface).

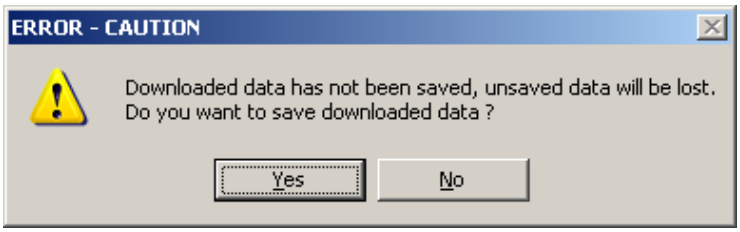
While the data is downloading, the viewing window will be refreshed every time a new fault/event is received. When the data is successful downloaded, the complete data is displayed in the viewing window and the **Save** button is added to the toolbar. The third status pane will display one of the status messages as defined in section 4.3.



For each fault/event record, the lines starting “P0”, “P1”, “P2” and “P3” are optional depending on the event record. The “Z” are ASCII character string to describe the fault or recorded parameter (this can be either a description or description with data.) The “(ZXX)” following P0 thru P4 are either two or three characters to describe data type (e.g. (U8) for unsigned 8 bit (S32) for signed 32 bit, etc.) The title lines (first 8 lines of the table) are be transmitted prior to sending the first record (the most recent record) in the list. The last line of the table is transmitted after the last record (the oldest record) in the event list. Refer to the maintenance manual for more details on each fault.

The **Save** toolbar button is used to save the downloaded data. The **Save** toolbar button will open the Save File Dialog Box, which lets the user specify the drive, directory, and name of the file to save. The Save File Dialog Box will apply the function’s file extension mask (*.dfe) and will default to the {root}\FCC\Faults & Events\ folder. When saved, the filename will be displayed in the fifth status pane.

If data was successful downloaded but not subsequently saved, attempting to exit the FCC Faults/Events download function will display the unsaved data error message box:



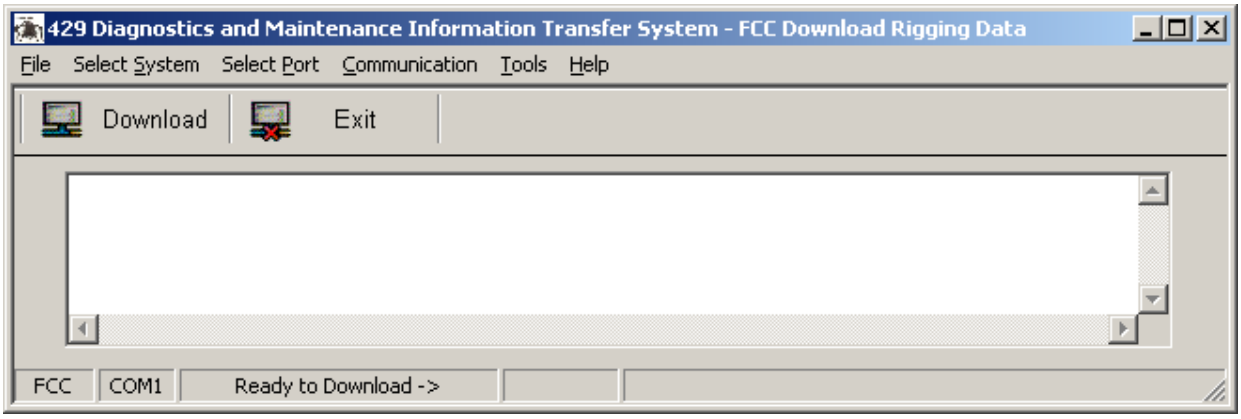
Selecting **Yes** will let the user save the downloaded data before exiting the FCC Faults/Events download function. Selecting **No** will exit the FCC Faults/Events download function without saving the downloaded data.

Doing one of the following will exit the FCC Faults/Events download function and close (or reset) the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar’s **Close** button

4.3.2 Download Rigging Data

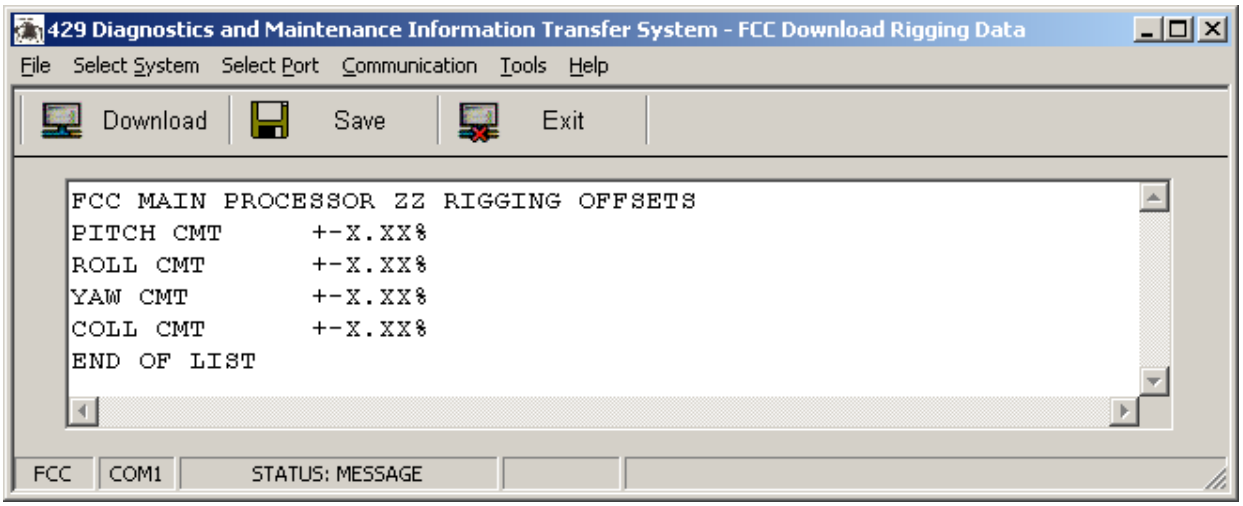
The Rigging Data download function downloads the stored CMT offset rigging data from the FCC. The function may be accessed by selecting the **Communication->Download Data->Rigging Data** menu item.



The **Download** button will launch the download process.

While data is being downloaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the download process.

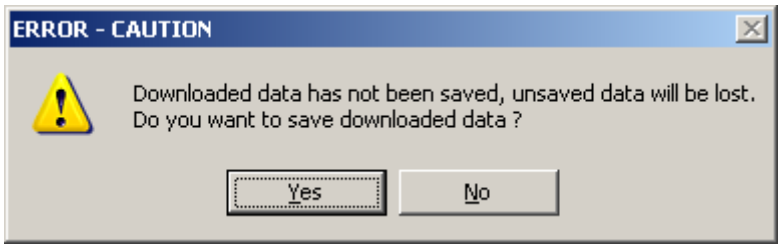
When the data is successful downloaded, the data is displayed in the viewing window and the **Save** button is added to the toolbar. The third status pane will display one of the status messages as defined in section 4.3.



"X" indicates a numeric character "0" thru "9". Three dashes "- - -" indicates a parameter is invalid or has not been initialized in NVM for that axis.

The **Save** toolbar button is used to save the downloaded data. The **Save** toolbar button will open the Save File Dialog Box, which lets the user specify the drive, directory, and name of the file to save. The Save File Dialog Box will apply the function's file extension mask (*.drd) and will default to the {root}\FCC\Rigging Data\ folder. When saved, the filename will be displayed in the fifth status pane.

If data was successful downloaded but not subsequently saved, attempting to exit the FCC Rigging Data download function will display the unsaved data error message box:



Selecting **Yes** will let the user save the downloaded data before exiting the FCC Rigging Data download function. Selecting **No** will exit the FCC Rigging Data download function without saving the downloaded data.

Doing one of the following will exit the FCC Rigging Data download function and close (or reset) the viewing window:

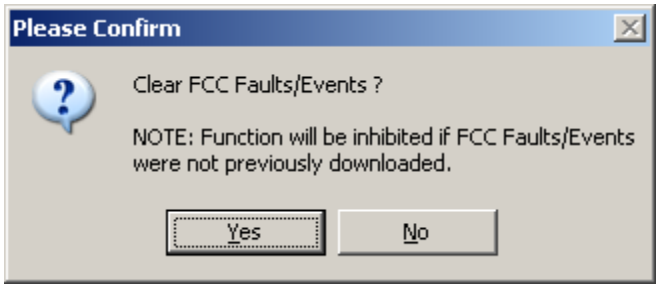
- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Close** button

4.3.3 NVM Clear FCC Faults/Events

The FCC Faults/Events NVM clear function erases the records from memory. The function may be accessed by selecting the **Communication->Clear NVM->FCC Faults/Events** menu item.

Note:

The FCC faults/events clear function is disabled for S/W 429-770-014-109, Version 1.0.



The confirmation message box is displayed. The **Yes** button will send the NVM clear command. The **No** button will cancel the clear operation.

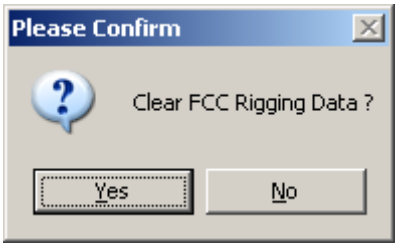
The third status pane will display one of the status messages as defined in section 4.3.

Note:

The NVM clear function will be inhibited by the fcc unless the FCC Faults/Events were previously downloaded per section 4.3.1.

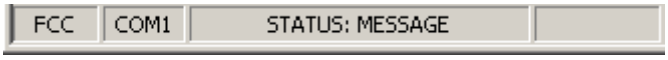
4.3.4 NVM Clear Rigging Data

The Rigging Data NVM clear function clears all the rigging correction values from memory. The function may be accessed by selecting the **Communication->Clear NVM->Rigging Data** menu item.



The confirmation message box is displayed. The **Yes** button will send the NVM clear command. The **No** button will cancel the clear operation.

The third status pane will display one of the status messages as defined in section 4.3.



4.4 LPS Maintenance Functions

There is one LPS installed on the model 429 helicopter. Selection is done via the GSE switch box. LPS maintenance functions include.

Download Functions

- Download Dimming Table (section 4.4.1)
- Download All Dimming Tables (section 4.4.2)
- Download LPS Fault Log (section 4.4.3)
- Download Status Data (section 4.4.4)
- Download Table CRC (section 4.4.5)
- Download Version Data (section 4.4.6)

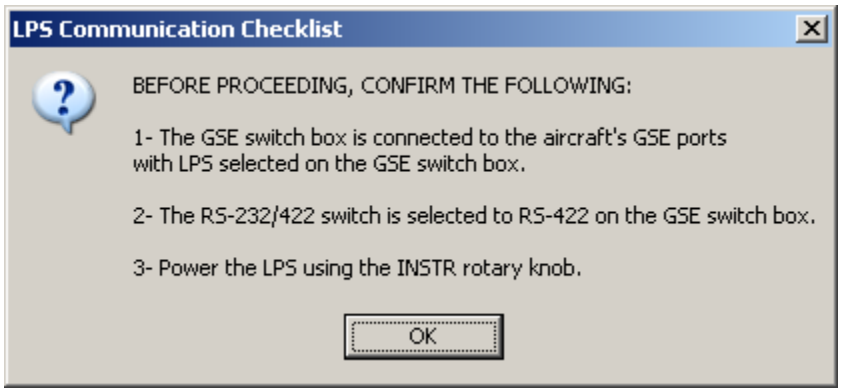
Upload Functions

- Upload Dimming Table (section 4.4.7)

NVM Clear Functions

- NVM Clear Fault Log (section 4.4.8)

When the LPS is selected as the desired system (**Select System->LPS**) and the communication port is configured (**Select Port->COMX**), the LPS's communication checklist message box is displayed. The message box details the required setup to interface with the LPS's maintenance functions.



After the setup is completed and the message box is closed, the LPS's maintenance functions may be accessed through the Communication drop down menu.

After performing a maintenance function, the third status pane will report one of the following status messages:

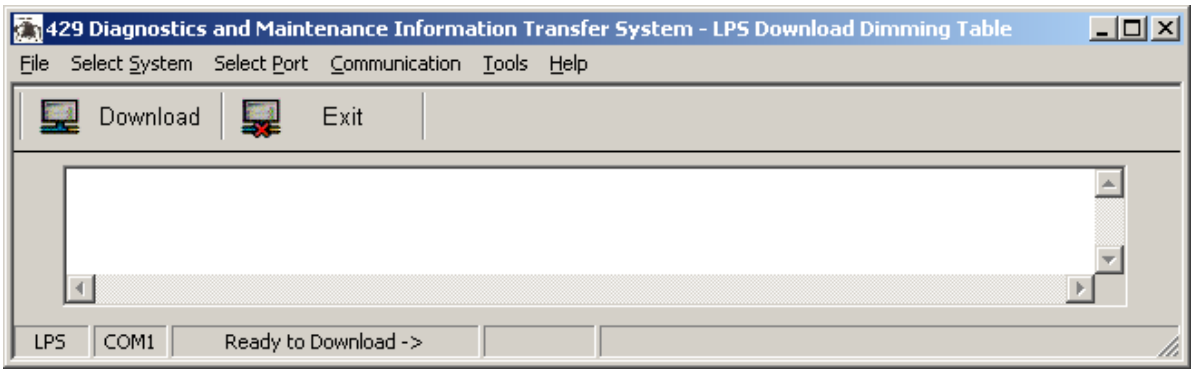
STATUS MESSAGE	DESCRIPTION	SOURCE
STATUS: UPLD COMPLETE	Successful completion of upload command	LPS
STATUS: UPLD ERROR	Parity or format error in uploaded data	LPS
STATUS: CLEAR COMPLETE	Successful completion of clear command	LPS
STATUS: CLR NOT ALLOWED	Receipt of inhibited clear command	LPS
STATUS: ERROR - NO FEEDBACK	No feedback from LPS after using an upload or a clear command	DMITS429
STATUS: UPLD ABORTED	Upload function was aborted using the **Abort** Toolbar button	DMITS429
STATUS: DNLD COMPLETE	Download function has completed	DMITS429
STATUS: ERROR - NO DATA	Download function has failed, no data was received from the LPS	DMITS429
STATUS: DNLD INCOMPLETE	Download function has not received the expected data	DMITS429
STATUS: DNLD ABORTED	Download function was aborted using the **Abort** Toolbar button	DMITS429
STATUS: NVM CLEAR CANCELLED	Memory clear was cancelled by selecting **No** on the confirmation message box	DMITS429

The following correlates LPS table numbers (used by the maintenance interface) to the LPS output number and associated systems.

Table No.	LPS Output No.	System	Table No.	LPS Output No.	System
1	5 VDC #1	Standby Attitude Indicator	21	28 VDC #6	Spare
2	5 VDC #2	GPS/NAV/COM #1	22	28 VDC #7	Lighting & ECS Control Panel Edgelit
3	5 VDC #3	GPS/NAV/COM #2	23	28 VDC #8	Air Conditioning Control Panel Edgelit
4	5 VDC #4	Standby Altimeter	24	28 VDC #9	CHFD Panel Edgelit
5	5 VDC #5	Standby Airspeed Indicator	25	28 VDC #10	Audio Panel
6	5 VDC #6	Spare	26	28 VDC #11	Transponder
7	5 VDC #7	Spare	27	28 VDC #12	ADF
8	5 VDC #8	Spare	28	28 VDC #13	Standby Compass
9	5 VDC #9	Spare	29	28 VDC #14	Right Display Unit Besel
10	5 VDC #10	Spare	30	28 VDC #15	Center Display Unit Besel
11	5 VDC #11	Spare	31	28 VDC #16	Left Display Unit Besel
12	5 VDC #12	Spare	32	28 VDC #17	Pilot Map Light
13	5 VDC #13	Spare	33	28 VDC #18	Copilot Map Light
14	5 VDC #14	Spare	34	28 VDC #19	Pilot Collective Edgelit
15	5 VDC #15	Spare	35	28 VDC #20	Copilot Collective Edgelit
16	28 VDC #1	Miscellaneous Control Panel Edgelit	36	28 VDC #21	Weather Radar Control Panel Annunciators
17	28 VDC #2	Weather Radar Control Panel Edgelit	37	28 VDC #22	Spare
18	28 VDC #3	Wheel Gear Control Panel Edgelit	38	28 VDC #23	Spare
19	28 VDC #4	Electrical Control Panel Edgelit	39	28 VDC #24	Spare
20	28 VDC #5	Engine & Fire Control Panel Edgelit	40	28 VDC #25	Spare

4.4.1 Download Dimming Table

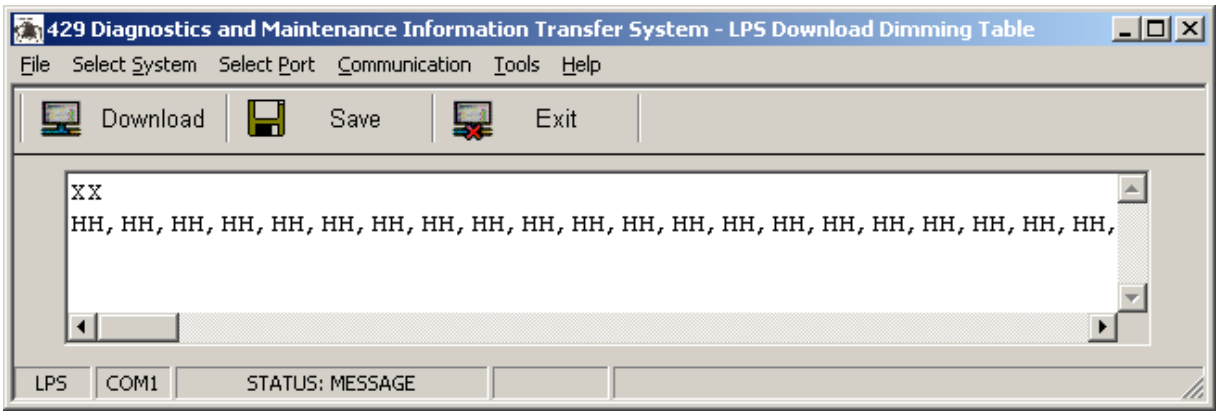
The Dimming Table download function downloads the dimming table data of a particular table stored in the LPS. The function may be accessed by selecting the **Communication->Download Data->Dimming Table** menu item.



The **Download** button will open the **Dimming Table Download** selection dialog box.

Entering a valid dimming table number (1 to 40) and pressing the **OK** button will launch the download process. While data is being downloaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the download process.

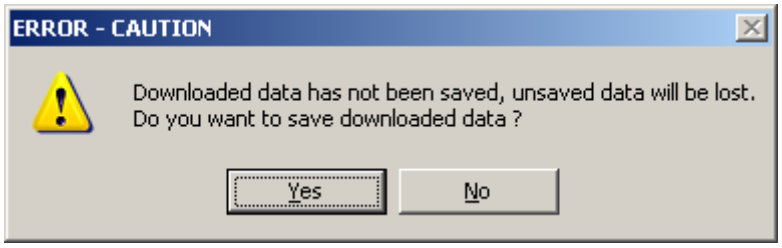
When the data is successful downloaded, the data is displayed in the viewing window and the **Save** button is added to the toolbar. The third status pane will display one of the status messages as defined in section 4.4.



"XX" indicates a numeric character "01" thru "40" and represents the dimming table number. "HH" indicates the hexadecimal values of the output voltages associated to different potentiometer position. Voltages are linearly scaled on the 256 possible values. "00" corresponds to 0 volts while "FF" corresponds to 5 volts for tables 1 thru 15 and 28 volts for tables 16 thru 40.

The **Save** toolbar button is used to save the downloaded data. The **Save** toolbar button will open the Save File Dialog Box, which lets the user specify the drive, directory, and name of the file to save. The Save File Dialog Box will apply the function's file extension mask (*.csv) and will default to the {root}\LPS\Dimming Table\ folder. When saved, the filename will be displayed in the fifth status pane.

If data was successful downloaded but not subsequently saved, attempting to exit the LPS Dimming Table download function will display the unsaved data error message box:



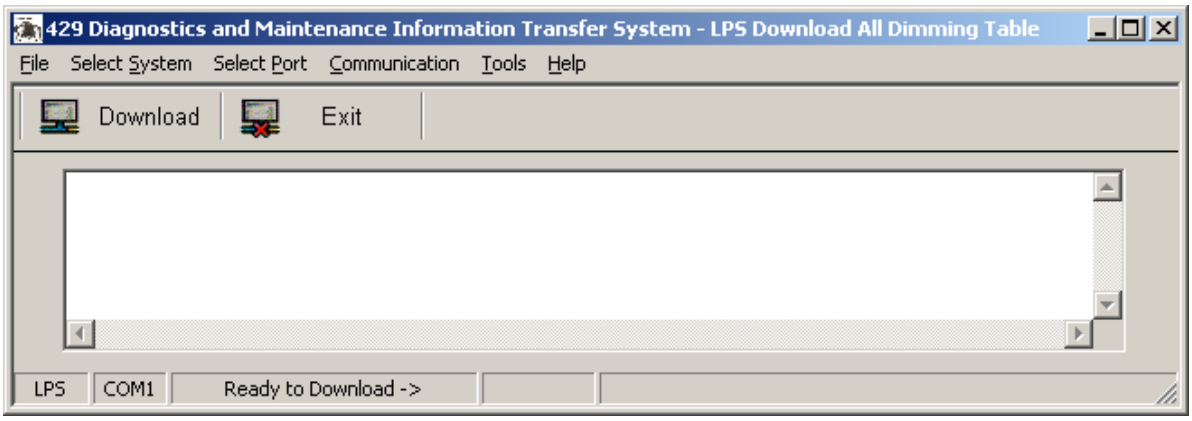
Selecting **Yes** will let the user save the downloaded data before exiting the LPS Dimming Table download function. Selecting **No** will exit the LPS Dimming Table download function without saving the downloaded data.

Doing one of the following will exit the LPS Dimming Table download function and close (or reset) the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Close** button

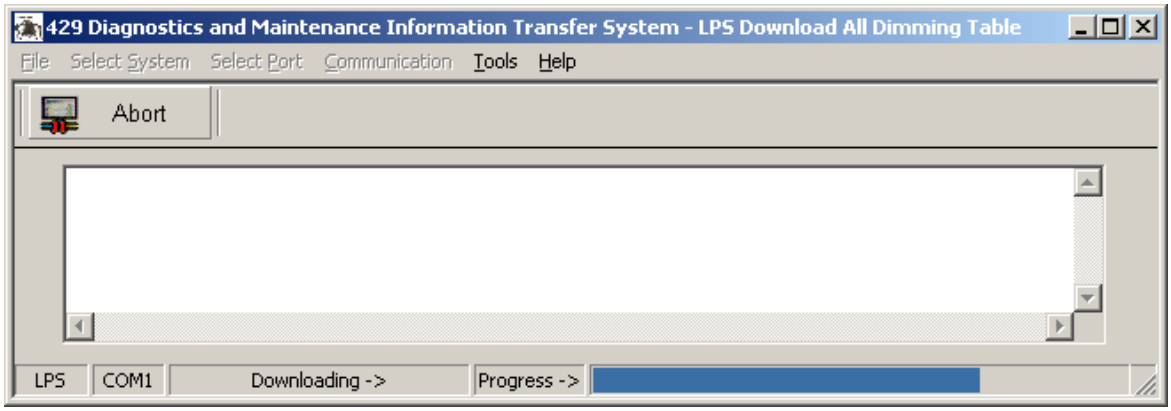
4.4.2 Download All Dimming Tables

The All Dimming Tables download function downloads the dimming table data of every table stored in the LPS. The function may be accessed by selecting the **Communication->Download Data->All Dimming Table** menu item.

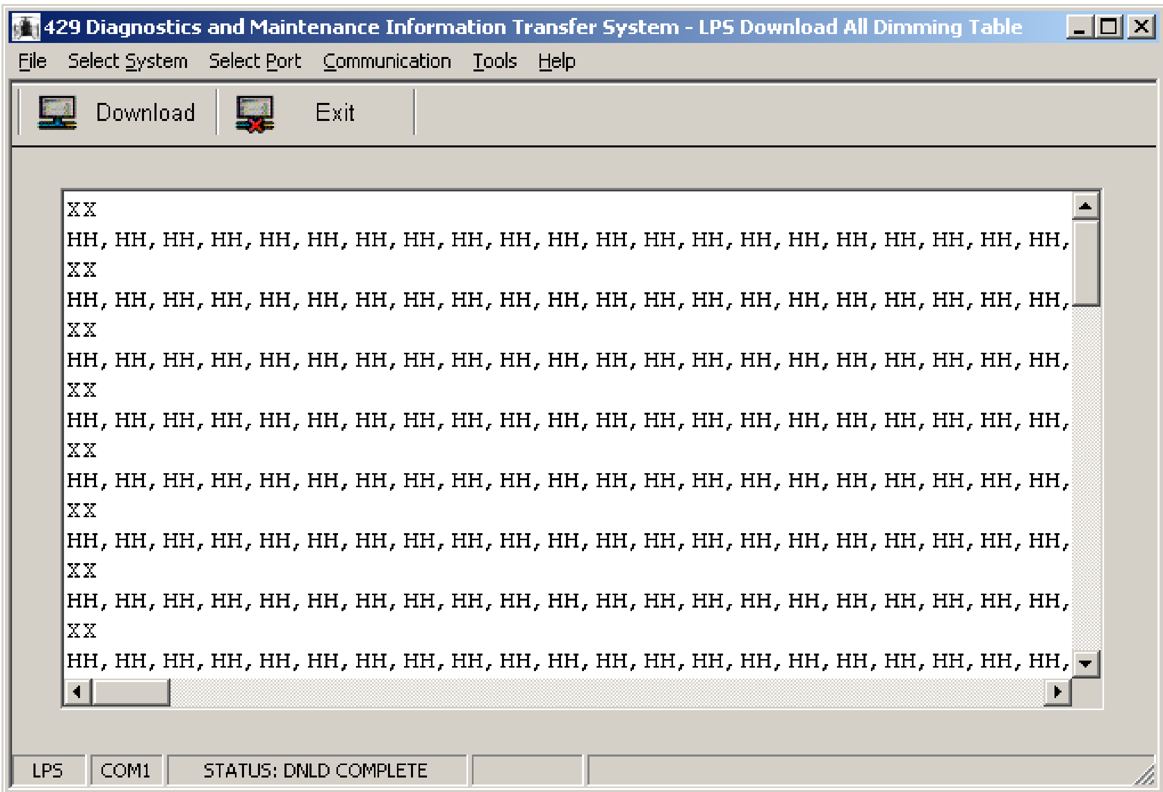


The **Download** button will launch the download process.

While data is being downloaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the download process. A progress bar is displayed in the fifth status pane to indicate download progress.



When the data is successful downloaded, the data is displayed in the viewing window and the **Save** button is added to the toolbar. The third status pane will display one of the status messages as defined in section 4.4.



"XX" indicates a numeric character "01" thru "40" and represent the dimming table's number. "HH" indicates the hexadecimal values of the output voltages associated to different potentiometer position. Voltages are linearly scaled on the 256 possible values. "00" corresponds to 0 volts while "FF" corresponds to 5 volts for tables 1 thru 15 and 28 volts for tables 16 thru 40.

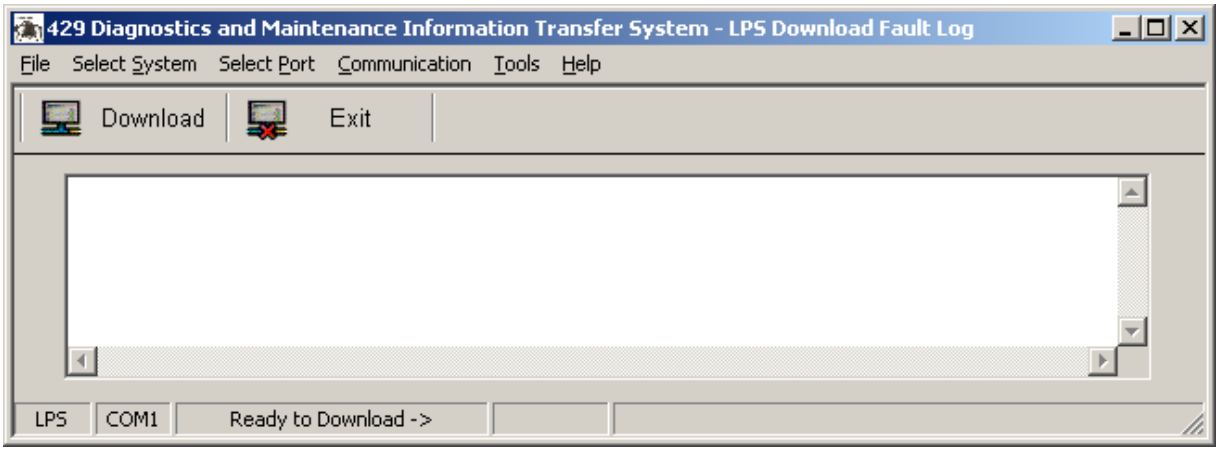
The downloaded information may not be saved. To save dimming table data, download individual dimming table per section 4.4.1.

Doing one of the following will exit the All Dimming Table download function and close (or reset) the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Close** button

4.4.3 Download LPS Fault Log

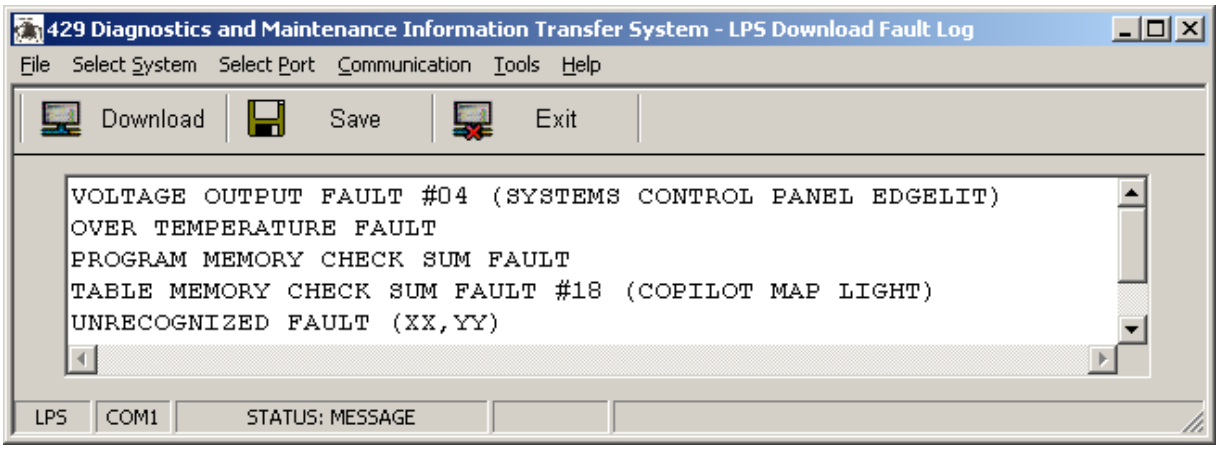
The LPS Fault Log download function downloads the fault code data stored in the LPS. The function may be accessed by selecting the **Communication->Download Data->Fault Log** menu item.



The **Download** button will launch the download process.

While data is being downloaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the download process.

When the data is successful downloaded, the data is displayed in the viewing window and the **Save** button is added to the toolbar. The third status pane will display one of the status messages as defined in section 4.4.



The fault codes transmitted by the LPS have the "XX,YY" format. They are translated by the application according to the following table.

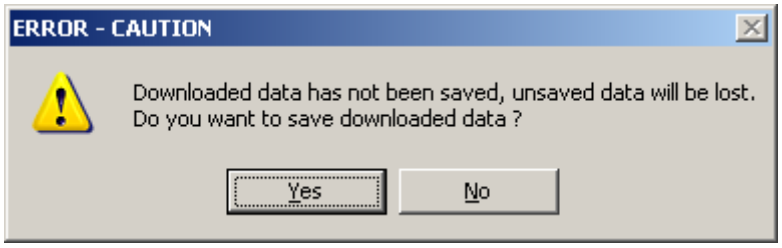
Fault Code	Displayed Fault Message
XX,VE	VOLTAGE OUTPUT FAULT #XX[1] (System Name)
00,TE	OVER TEMPERATURE FAULT
00,PM	PROGRAM MEMORY CHECK SUM FAULT
XX,TM	TABLE MEMORY CHECK SUM FAULT #XX (System Name)

When a code does not match any of the above codes, the "UNRECOGNIZED FAULT (XX,YY)" message is displayed, where "XX,YY" is the fault code transmitted by the LPS.

The **Save** toolbar button is used to save the downloaded data. The **Save** toolbar button will open the Save File Dialog Box, which lets the user specify the drive, directory, and name of the file to save. The Save File Dialog Box will apply the function's file extension mask (*.dfl) and will default to the {root}\LPS\Fault Log\ folder. When saved, the filename will be displayed in the fifth status pane.

[1] XX indicates the output table number; 01 thru 40.

If data was successful downloaded but not subsequently saved, attempting to exit the LPS Fault Log download function will display the unsaved data error message box:



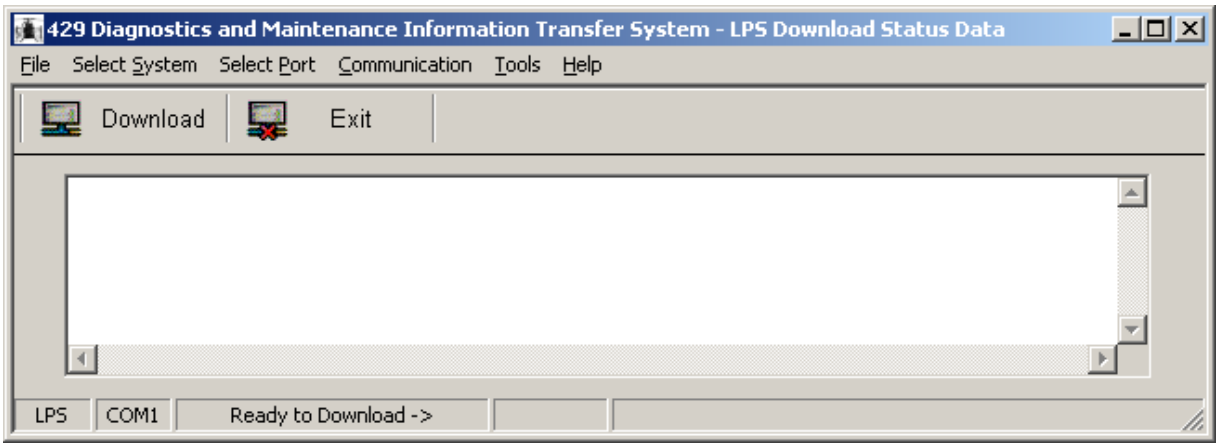
Selecting **Yes** will let the user save the downloaded data before exiting the LPS Fault Log download function. Selecting **No** will exit the LPS Fault Log download function without saving the downloaded data.

Doing one of the following will exit the LPS Fault Log download function and close (or reset) the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Close** button

4.4.4 Download Status Data

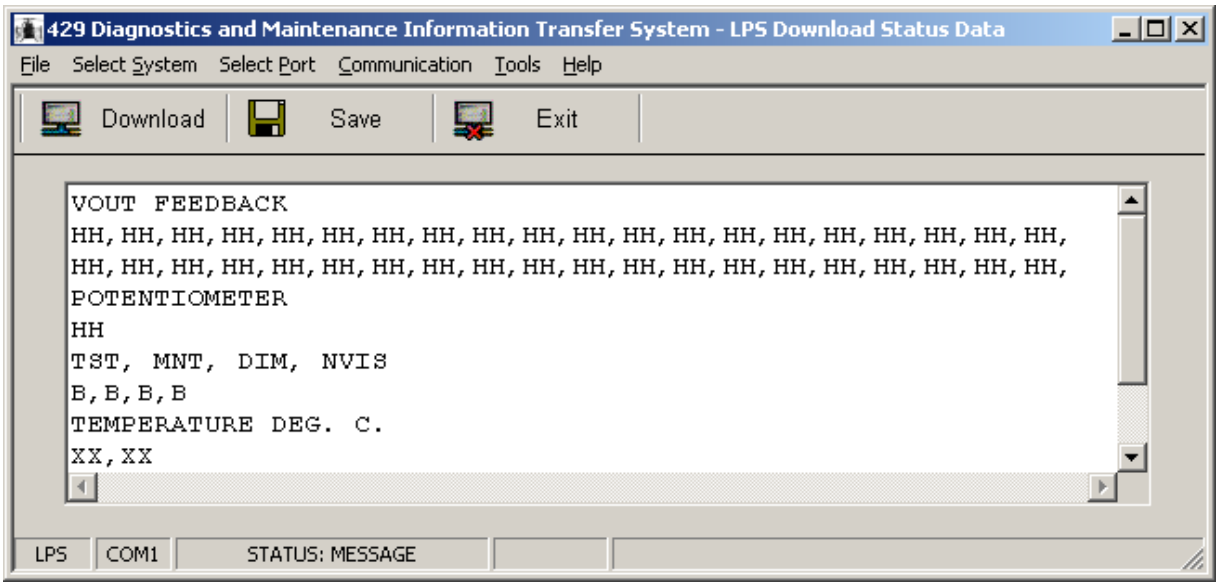
The Status Data download function downloads the current temperature sensor values, input switch status and output voltage levels from the LPS. The function may be accessed by selecting the **Communication->Download Data->Status Data** menu item.



The **Download** button will launch the download process.

While data is being downloaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the download process.

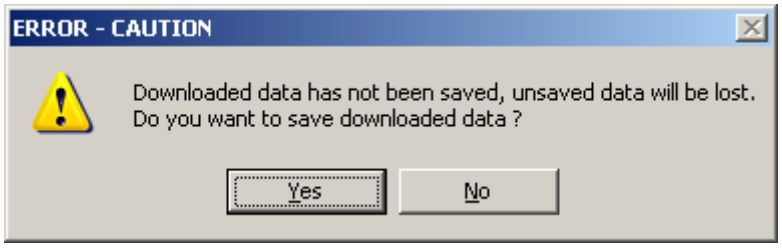
When the data is successful downloaded, the data is displayed in the viewing window and the **Save** button is added to the toolbar. The third status pane will display one of the status messages as defined in section 4.4.



The VOUT FEEDBACK “HH” indicates the hexadecimal values of the output voltages associated to current potentiometer position. The POTENTIOMETER “HH” indicates the hexadecimal value of the current potentiometer position. The TST, MNT, DIM, NVIS “B” indicates binary values “0” or “1” to represent the status of the switches. The TEMPERATURE DEG. C. “XX” indicates a numeric character “0” thru “9” to represent values of the temperature sensors.

The **Save** toolbar button is used to save the downloaded data. The **Save** toolbar button will open the Save File Dialog Box, which lets the user specify the drive, directory, and name of the file to save. The Save File Dialog Box will apply the function’s file extension mask (*.dsd) and will default to the {root}\LPS\Status Data\ folder. When saved, the filename will be displayed in the fifth status pane.

If data was successful downloaded but not subsequently saved, attempting to exit the LPS Status Data download function will display the unsaved data error message box:



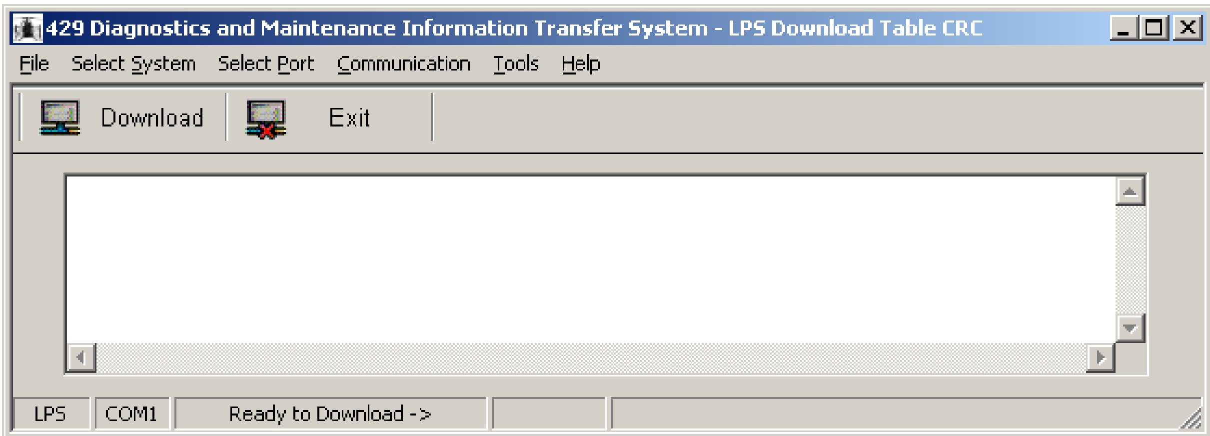
Selecting **Yes** will let the user save the downloaded data before exiting the LPS Status Data download function. Selecting **No** will exit the LPS Status Data download function without saving the downloaded data.

Doing one of the following will exit the LPS Status Data download function and close (or reset) the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Close** button

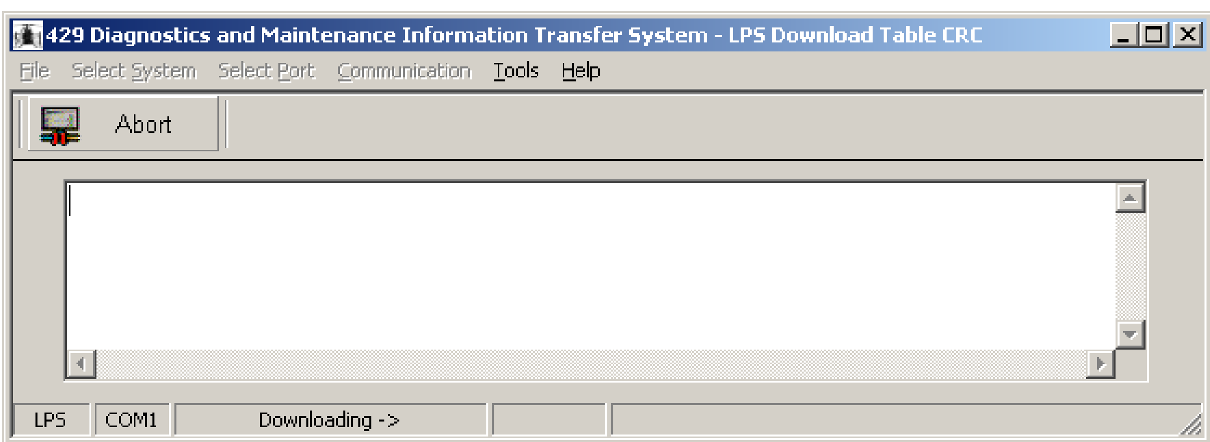
4.4.5 Download Table CRC

The Table CRC download function downloads the dimming tables CRC values from the LPS. The function may be accessed by selecting the **Communication->Download Data->Table CRC** menu item.

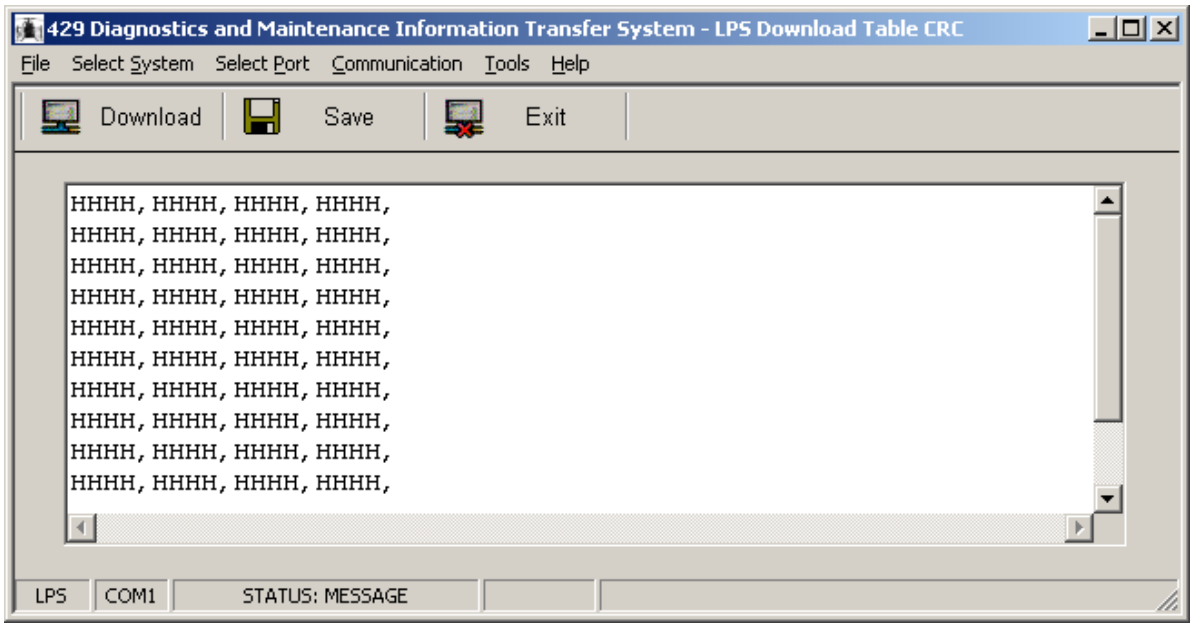


The **Download** button will launch the download process.

While data is being downloaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the download process.



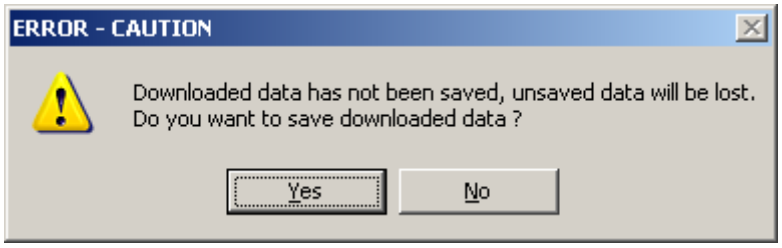
When the data is successful downloaded, the data is displayed in the viewing window and the **Save** button is added to the toolbar. The third status pane will display one of the status messages as defined in section 4.4.



"HHHH" indicates the hexadecimal value of the dimming table CRC. The first two "HH" represent the HI byte and the last two "HH" represent the LO byte. The first CRC value is associated to dimming table 1, the remaining are presented sequentially up to dimming table 40.

The **Save** toolbar button is used to save the downloaded data. The **Save** toolbar button will open the Save File Dialog Box, which lets the user specify the drive, directory, and name of the file to save. The Save File Dialog Box will apply the function's file extension mask (*.dcr) and will default to the {root}\LPS\Table CRC\ folder. When saved, the filename will be displayed in the fifth status pane.

If data was successful downloaded but not subsequently saved, attempting to exit the LPS Table CRC download function will display the unsaved data error message box:



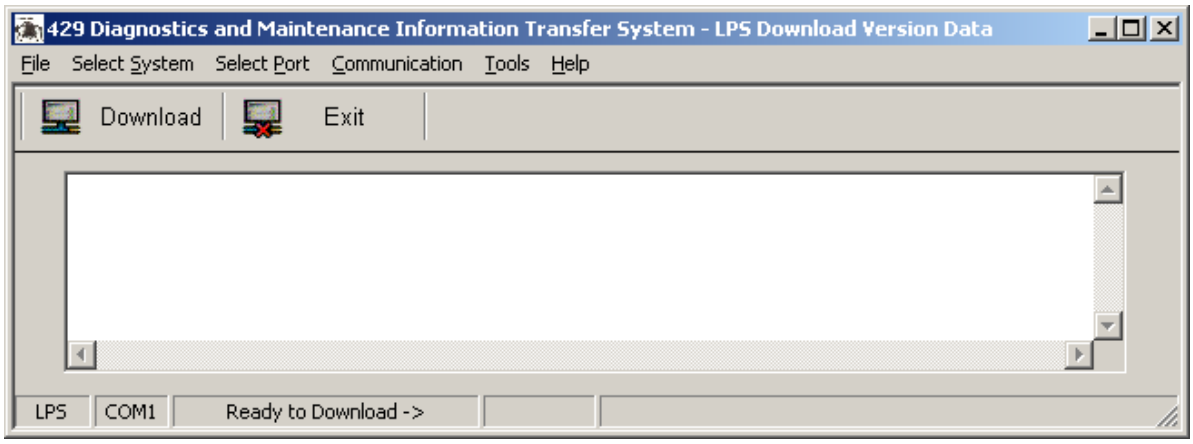
Selecting **Yes** will let the user save the downloaded data before exiting the LPS Table CRC download function. Selecting **No** will exit the LPS Table CRC download function without saving the downloaded data.

Doing one of the following will exit the LPS Table CRC download function and close (or reset) the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Close** button

4.4.6 Download Version Data

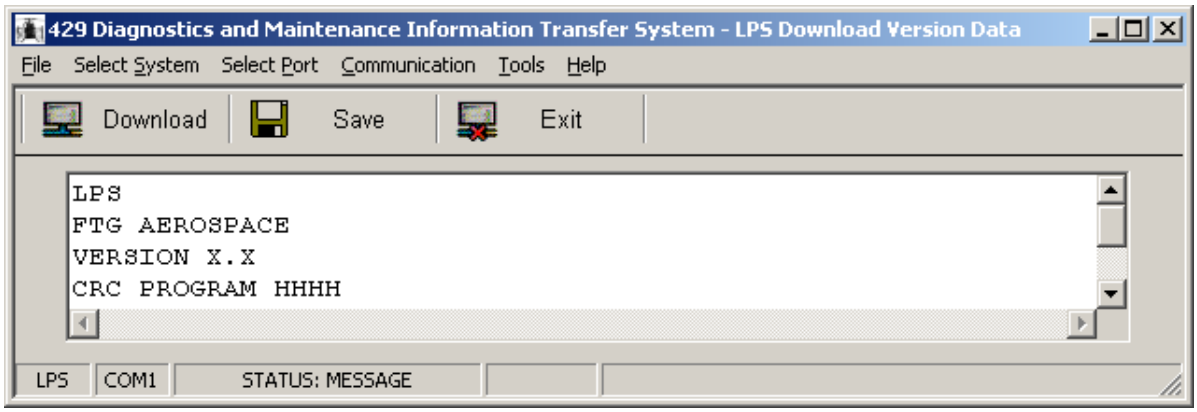
The Version Data download function downloads the product name, company name and the loaded software version from the LPS. The function may be accessed by selecting the **Communication->Download Data->Version Data** menu item.



The **Download** button will launch the download process.

While data is being downloaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will terminate the download process.

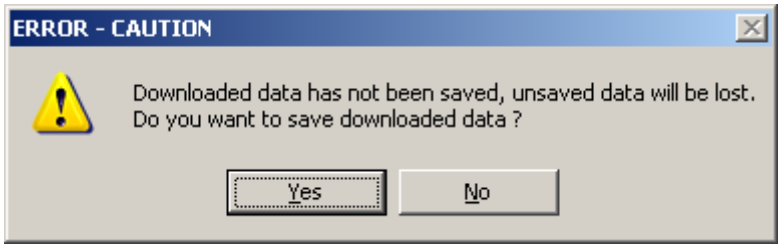
When the data is successful downloaded, the data is displayed in the viewing window and the **Save** button is added to the toolbar. The third status pane will display one of the status messages as defined in section 4.4.



The "X.X" indicates the revision. The "HHHH" indicates the two byte of the calculated CRC in hexadecimal.

The **Save** toolbar button is used to save the downloaded data. The save toolbar button will open the Save File Dialog Box, which lets the user specify the drive, directory, and name of the file to save. The Save File Dialog Box will apply the function's file extension mask (*.dvd) and will default to the {root}\LPS\Version Data\ folder. When saved, the filename will be displayed in the fifth status pane.

If data was successful downloaded but not subsequently saved, attempting to exit the LPS Version Data download function will display the unsaved data error message box:



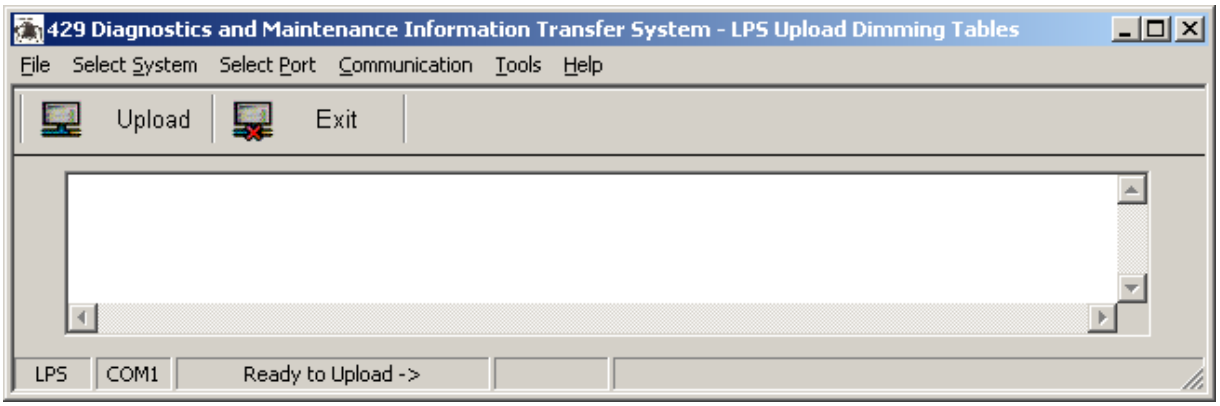
Selecting **Yes** will let the user save the downloaded data before exiting the LPS Version Data download function. Selecting **No** will exit the LPS Version Data download function without saving the downloaded data.

Doing one of the following will exit the LPS Version Data download function and close (or reset) the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Close** button

4.4.7 Upload Dimming Table

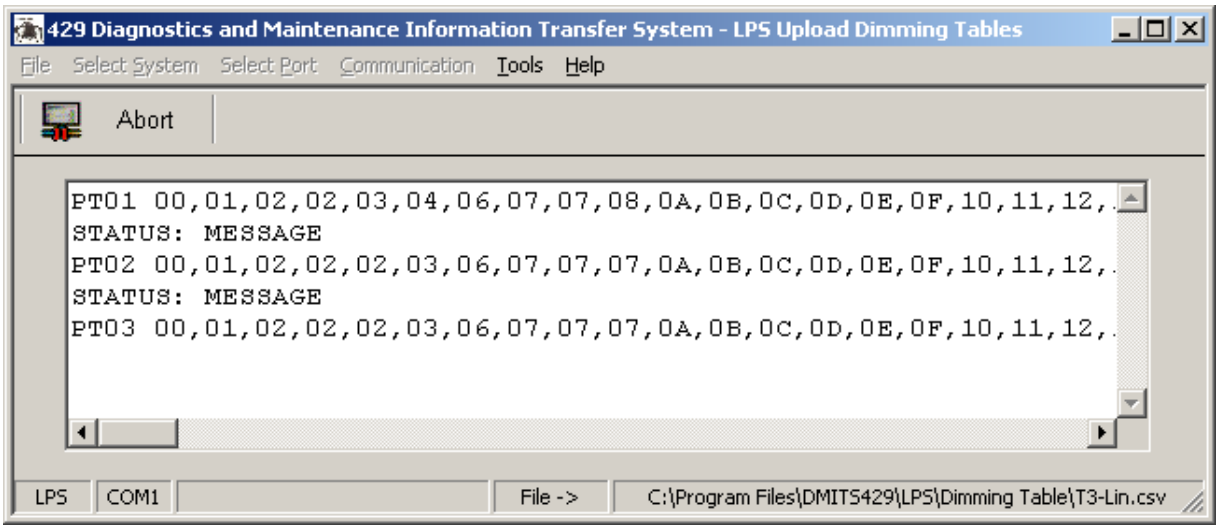
The Dimming Table upload function stores the dimming table data of a particular output in the LPS. The function may be accessed by selecting the **Communication->Upload Data->Dimming Table** menu item.



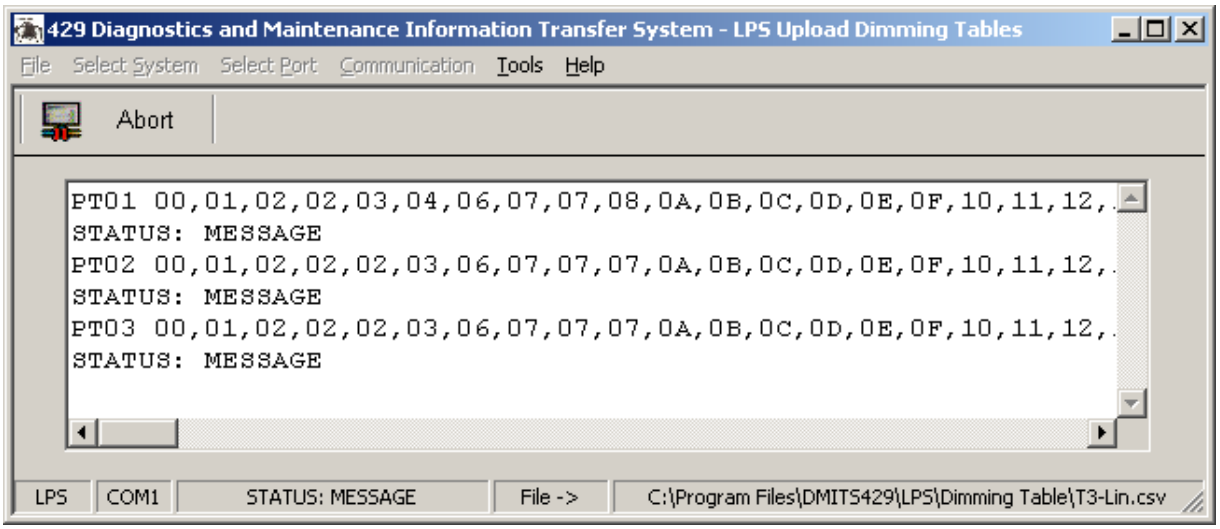
The **Upload** button will open the Open File Dialog Box, which lets the user specify the drive, directory, and name of the file to open. The Open File Dialog Box will apply the function's file extension mask (*.csv) and will default to the {root}\LPS\Dimming Table\ folder. Multiple files[4] may be selected at once. In the example below, five tables will be uploaded by the upload process.

[4] There is no limit on the number of dimming table to select; user may upload 1 or all 40 tables.

When all desired files are selected and the **Open** button pressed, the upload process is launched. The current table data is displayed in the viewing window (on the lower row) as it is uploaded and its filename is displayed in the fifth status pane.

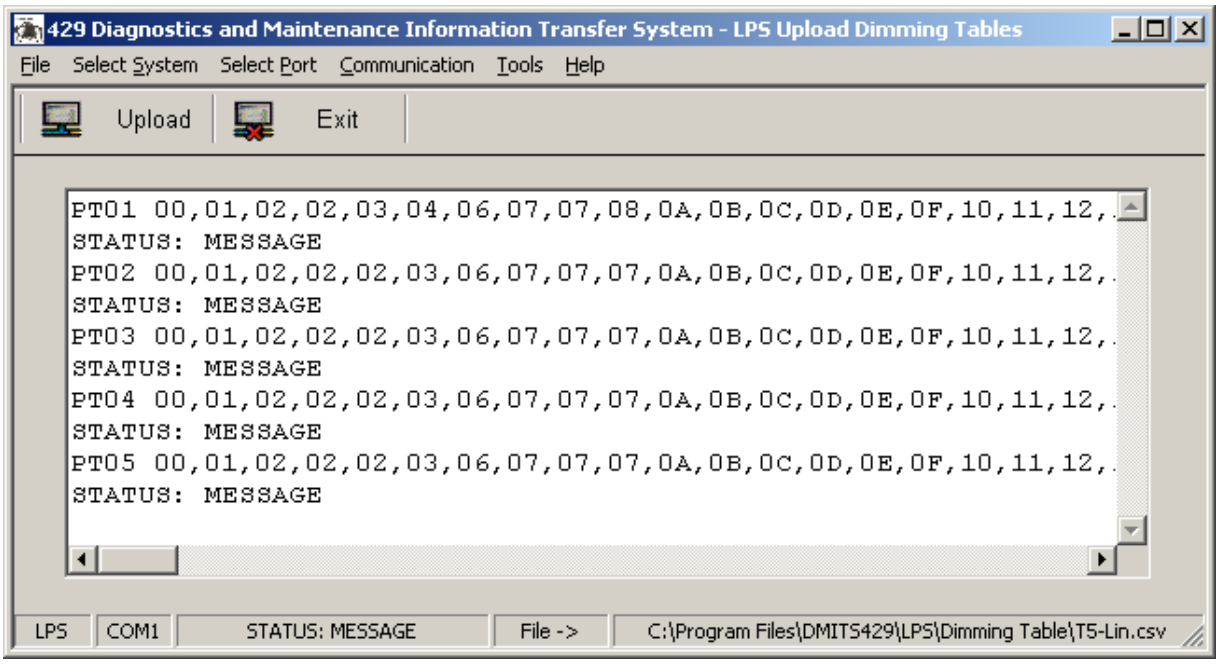


When a table is uploaded, the application listens for a status message form the LPS. These messages, as defined in section 4.4, are displayed in the third status pane. When multiple files are selected for upload, the status messages are displayed for one second in the third status pane and are added following the table data before the upload process continues with the next file in the sequence.



While data is being uploaded, the **File**, **Select System**, **Select Port** and the **Communication** drop down menus are deactivated. The toolbar buttons are modified and the **Abort** button is displayed; pressing this button will complete the current file upload and then terminate the upload process.

When all files are uploaded, the toolbar regains its original buttons.

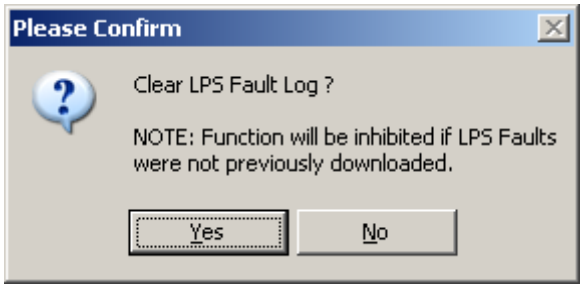


Doing one of the following will exit the LPS Dimming Table upload function and close the viewing window:

- Selecting a menu item in the **File->View** horizontal drop down menu
- Selecting a different maintenance system in the **Select System** drop down menu
- Selecting the **Select Port->Close Port** menu item
- Selecting a menu item in the **Communication** drop down menu
- Pressing the toolbar's **Close** button

4.4.8 NVM Clear Fault Log

The Fault Log NVM clear function clears all the fault log data from memory. The function may be accessed by selecting the **Communication->Clear NVM->Fault Log** menu item.



The confirmation message box is displayed. The **Yes** button will send the NVM clear command. The **No** button will cancel the clear operation.

The third status pane will display one of the status messages as defined in section 4.4.

Note:

The NVM clear function will be inhibited by the lps unless the LPS FAULT LOG wAS previously downloaded per section 4.4.3.

5.0 ACRONYMNS

ADF ..... Automatic Direction Finder
ADMM ..... Aircraft Data Memory Module
ADIU ..... Aircraft Data Interface Unit
ARINC ..... Aeronautical Radio Incorporated
ASCII ..... American Standard Code for Information Interchange
CAS ..... Crew Alerting System
CHFD ..... Course / Heading / Flight Director Panel
COM ..... Communication
CRC ..... Cyclic Redundancy Check
DMITS ..... Diagnostic and Maintenance Information Transfer System
DU ..... Display Unit
EDR ..... Electronic Data Recorder
FCC ..... Flight Control Computer
GPS ..... Global Positioning System
GSE ..... Ground Service Equipment
IAS ..... Integrated Avionics System
LPS ..... Lighting Power Supply
NAV ..... Navigation
NVM ..... Non Volatile Memory
PC ..... Personnal computer
P/N ..... Part Number
UAC ..... User Account Control
USB ..... Universal Serial Bus
XFER ..... Transfer