Data Transfer Software User Guide

Revision History

Issue	Date	Revision Author	Change
18	28th October 2016	E. Ross	Update to show CompactFlash warning message and resolution
17	26th August 2016	M. Mooge	Updated for Flight Data Connect
16	18th December 18 2015	E. Ross	New address added, as well as additions to inserting and removing media steps
15	3rd September 2015	E. Ross	Clarified Operating Systems for Post Installation Steps
14	6th August 2015	E. Ross	Updated Overview and installation instructions
13	17th July 2015	E. Ross	Imported in to new template plus minor updates

Contents

Overview

POLARIS transfer is a PC based tool that allows Flight Data Monitoring (FDM) data to be securely transmitted from a customer to Flight Data Services (FDS).

Operating systems compatible with POLARIS transfer are listed in *Annex A – Software Installation and Updates*. The Operating system should be directly installed on the computer as FDS does not support POLARIS transfer if run from a virtual machine.

Using POLARIS transfer, aircraft data can be downloaded from transfer media (USB memory sticks, Compact Flash cards, folders on hard disk drives etc), and automatically transmitted to FDS. Data on the transfer media will then be automatically deleted.

Software version control and backup of data are all controlled remotely by FDS.

The use of power saving features may disrupt the reading, processing or sending of flight data by POLARIS transfer. We recommend that these features are disabled. Please contact your company's IT department for further instructions.

POLARIS transfer supports over 40 media formats and recorder types.

Before flight data is uploaded, POLARIS transfer will attempt to identify an aircraft registration in any data inserted. A file integrity check resulting in a 256 bit checksum is taken when data is inserted. Duplicate data will be detected (by comparing the checksums) and not uploaded. POLARIS transfer has the ability to resume uploads in the event of network outages. Regardless of the proprietary format of the data inserted, it will always be converted to the ARINC 717 standard.

The FDS Technical Support team have the ability to track flight data uploads from the moment of media insertion into DTU so please contact them using the details at the end of this guide if you require assistance with any uploads.

The media that was used to upload the flight data will be formatted ready for use in the aircraft, but data will only be deleted from the media once it has been successfully uploaded and archived.

IMPORTANT: Please read the *Connection Troubleshooting* section to confirm the IP Address and Ports required by POLARIS transfer, and make sure they are accessible on your network.

Introduction to POLARIS transfer

POLARIS transfer conducts the task of reading data from various locations (USB media, folders on hard disk drives etc.), identifying which aircraft the data originated from, transforming the data into a standard compressed format and then securely transmitting the processed data to FDS for event analysis.

To understand the state of processing, the POLARIS transfer screen is divided into two sections; **Read Data** on the left and **Send Data** on the right.

Figure 1: POLARIS transfer with Read Data section highlighted

The **Read Data** section initially displays *Waiting for Configuration Data* until the unit has received configuration data from Flight Data Services over the internet. Once configured, this section will display the current state of POLARIS transfer reading from media connected to the computer; whether it is *Waiting to Read*, *Reading*, if there is *Unknown Media* or if the user should *Remove Media*.

Figure 2: POLARIS transfer with Send Data section highlighted

The **Send Data** section displays the state of the network connection; whether there is *No Connection to upload servers*, if the computer is connected and *Waiting to transmit* or if the computer is currently *Transmitting* data.

A description of these states is available in the *Icon Descriptions* section of this manual.

Starting POLARIS transfer

For POLARIS transfer hardware units supplied by Flight Data Services, when the unit is switched on, the POLARIS transfer program is always running.

Customers running POLARIS transfer software on their own hardware will need to launch POLARIS transfer via the *POLARIS transfer* icon either on the *Desktop, Quick Launch* Menu, or *Start* Menu. The software should be set to *run as Administrator*, as shown in *Annex A – Software Installation and Updates, Step 8 (a or b depending on Operating System in use)*.

Once started, the initial starting screen will appear (see *Figure 3 below*).

Figure 3: POLARIS transfer user interface

The first time POLARIS transfer is started, a *Configuration* window will appear (see *Figure 4* below).
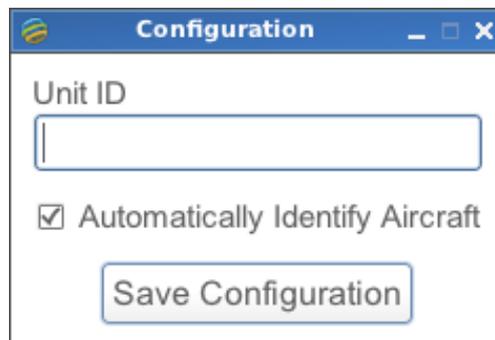

Figure 4: Configuration window

Enter your **Unit ID** into the input field. The Unit ID will have been provided by FDS. If you have not received it, please contact FDS (see *Annex D* for contact details). The Unit ID may have already been input, especially on Hardware units.

The *Automatically Identify Aircraft* checkbox specifies whether POLARIS transfer should attempt to automatically identify aircraft when media is inserted. If this checkbox is disabled, you will be prompted to manually confirm the aircraft registration every time media is inserted.

After the Unit ID has been entered, click *Save Configuration*. POLARIS transfer will now attempt to send the initialisation information to FDS. If there is *No Connection to upload servers*, POLARIS transfer will wait until a connection is established to send the initialisation information.

If the Unit ID entered is incorrect, the window will reappear. If this problem continues to occur, please contact FDS to confirm your Unit ID.

Waiting for Configuration Data and *No Connection to Upload Servers* icons will be displayed as the unit self-tests and configuration data is downloaded. When complete, the unit will display *Waiting to Read* in the *Read Data* section (see *Figure 5*).

Figure 5: POLARIS transfer in the Waiting to read state

When the *Read Data* section says *Waiting to read* and the *Send Data* section says *Waiting to transmit* POLARIS transfer is ready for use.

Inserting Media

POLARIS transfer will start processing media once it has been inserted and:

If the aircraft registration can be identified from the media, the data will be uploaded to Flight Data Services automatically.

If the aircraft registration cannot be identified from the media, the *Aircraft Registration* window will appear. Refer to the *Aircraft Registration* section of this manual for more information.

If the media inserted is empty, you will be invited to either remove the media or format it for use in an aircraft. Refer to the *Empty Media* section of this manual for more details.

If it appears that the media does not contain valid FDM data, the *Unknown Media* window will appear. Refer to the *Unknown Media* section of this manual for more details.

Reading from the media will now commence, indicated by the appearance of the *Reading* icon in the *Read Data* section and updates to the progress bar below (see *Figure* 6).
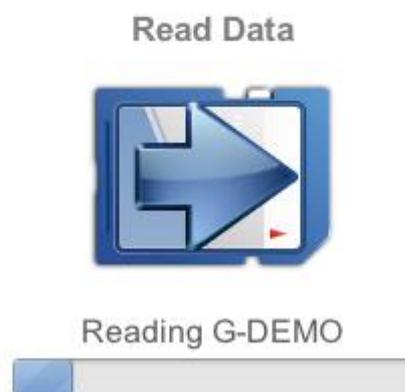
Read Data

Reading G-DEMO

Figure 6: Reading from the media

DO NOT remove media **unless** the *Remove media* message and icon are displayed (see *Figure 7*).

Figure 7: Remove media

If the data cannot be read, or if the card is found to be empty, we strongly encourage you to prepare the media (using the on-screen tools) for the relevant recorder type, so that data can be recorded the next time the media is inserted in the aircraft.

Aircraft Registration

If POLARIS transfer is unable to identify aircraft registration from the uploaded data (or if in the initial *Configuration* window, *Automatically Identify Aircraft* was unchecked) the *Aircraft Registration* window will appear.

Figure 8: Aircraft Registration window

Aircraft registration can be manually selected by clicking on the drop-down menu and selecting the aircraft registration. Once the correct aircraft registration has been selected, click on the *OK* button. POLARIS transfer will now start to read and transmit the data.

If the aircraft registration is not listed please contact FDS (see *Annex D – Support* for details).

Figure 9: Choosing the Aircraft Registration

Clicking on the *Cancel* button will stop the data upload process and you will be informed to *Remove media.*

Empty Media

If the media inserted is entirely empty, the *Empty Media* window will appear.

Media on device '/dev/sdb' is Empty and ready for use in the aircraft again.

Ok

To prepare the media for use in a different recorder, click here.

Figure 10: Empty media window

In this case there is no flight data on the media to process and transmit.

Possible causes of Empty Media:

- The media has already been processed by POLARIS transfer and therefore has been initialised ready for use in the aircraft.

- The media is new and has not been recorded to by a flight data recorder.

If it is required that the media should be prepared for use in another aircraft, click on the blue hyperlink at the bottom of the window. The *Initialisation* window will appear.

Prepare media for use in aircraft

In order to prepare the media correctly, please select the recorder type the media will be used in.

◉ L3UQAR

○ FDVSSQAR

○ TDWGL

Cancel   Initialise Media

Figure 11: Initialisation window

Choose which recorder the media should be prepared for and then click on *Initialise Media.* Once the media has been initialised the *Remove Media* icon will appear along with an *Eject* button.
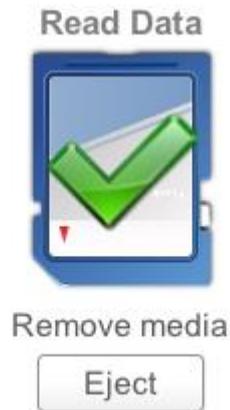
Figure 12: Remove media with eject button

It is now safe to remove the newly prepared media, either by physically removing the media from the device or by clicking on the *Eject* button. Please note that if the *Eject* button is clicked and the device does not have the capability to physically eject the media, it will still have to be removed manually from the device.

Icon Descriptions

Read Data Icons

The **Read Data** section can be found on the left-hand side of the screen.

The icons and associated text which can appear in the Read Data section are:

Waiting for configuration data

The Waiting for configuration data icon is displayed when the POLARIS transfer software has not been authenticated by Flight Data Services or is waiting for configuration data from the FDS servers.

This icon will be replaced by the Waiting to read icon when a valid Unit ID has been entered and the configuration data has been received from FDS.

Waiting to Read

The Waiting to Read icon is displayed when no media is inserted; the unit is ready for new media to be inserted for processing.

Reading

When media is inserted, the Reading icon is displayed while the content of the media is read. **The card must not be removed while this icon is visible.**

Remove media

The Remove media icon is displayed when POLARIS transfer has finished reading the inserted media. It is safe to remove media when this icon is displayed.

Send Data Icons

The **Send Data** section can be found on the right-hand side of the screen.

The icons and associated text which can appear in the Send Data section are:

No Connection to Upload Servers

The No connection to upload servers icon is displayed when POLARIS transfer cannot connect to FDS servers. In this situation, FDM data can still be processed by the software and will be transmitted when connection is remade.

If the icon persists, follow the troubleshooting guide found in *Annex D – Support*.

Waiting to Transmit

The Waiting to transmit icon is displayed when POLARIS transfer is ready to transmit FDM data.

Transmitting

The Transmitting icon is displayed when POLARIS transfer is transmitting data to FDS. If connection is lost during a transmission, it will be automatically resumed when connection is remade.

Do not close the program or switch off the unit when this icon is displayed.

Downloading Program Update

The Downloading Program Update icon is displayed when POLARIS transfer is downloading a program update. Further information regarding updates can be found in the Chapter titled Automatic Updates.

Troubleshooting

Unknown Media

When POLARIS transfer cannot identify the recorder from which the data was downloaded, the *Unknown media* window will appear (see *Figure 13*). There follows a three step process which prepares the media for use in the aircraft and optionally sends the contents to Flight Data Services for analysis.

Figure 13: Unknown Media dialog, step one

Possible causes of *Unknown Media*:

- The media does not contain FDM data.

- The contents of the media or the media file system structure may be corrupt.

- The media contains valid FDM data which was recorded by a type of recorder that has not been registered with this copy of POLARIS transfer.

To stop the procedure without altering the contents of the media, click on the *Cancel* button at any point.

Otherwise, click on the *Continue* button to progress to the next step (see *Figure 14)*.
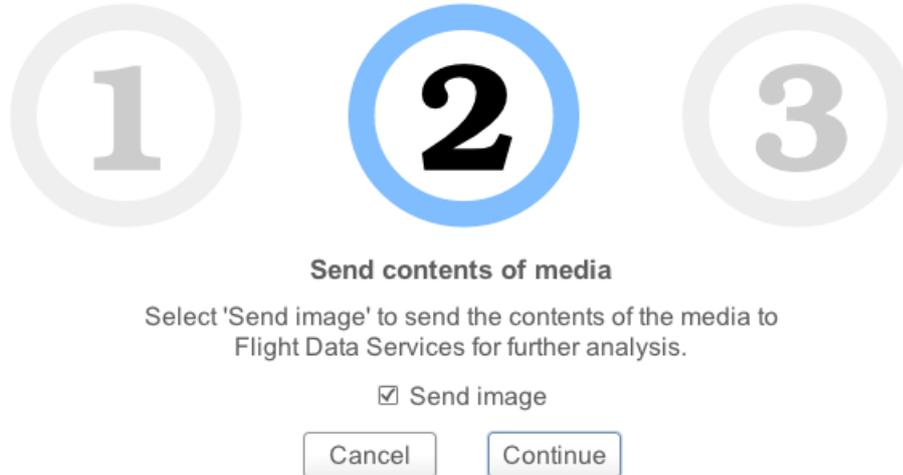
Figure 14: Unknown Media dialog, step two

Leave the *Send Image* checkbox ticked to send the contents of the media for analysis, otherwise untick the *Send Image* checkbox. Click *Continue* to proceed to step three (see *Figure 15*).
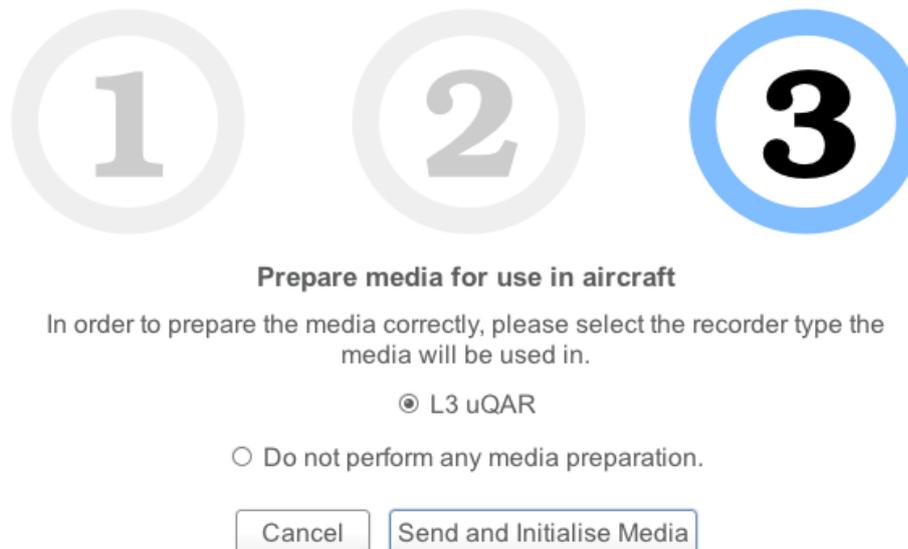

Figure 15: Unknown Media dialog, step three

Select which recorder to prepare the media for and click on the *Initialise Media* button to process the media. The *Remove Media* icon will be displayed once the media is ready for use in the aircraft.

Reappearing Configuration Dialog

POLARIS transfer relies upon strict authentication when communicating with Flight Data Services to ensure the secure transmission of flight data. Therefore it may be required after first starting POLARIS transfer to validate the Unit ID of the POLARIS transfer unit.

If the *Configuration* window appears while POLARIS transfer is running, please re-enter the Unit ID which was initially supplied with the software.
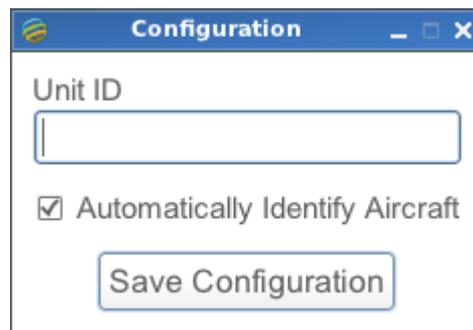

Figure 16: Configuration window

Permissions on Start

If POLARIS transfer does not have read or write permissions to the installation directory, you will be presented with the following window when starting the software.
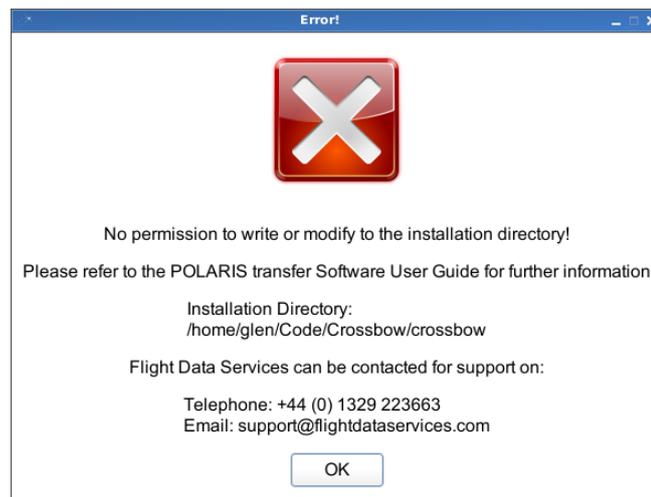
Figure 17: Permission error

Software licenses of POLARIS transfer must be run on a user account with *Computer administrator* privileges as instructed in *Annex A – Software Installation and Updates*.

L3 uQAR Quarantine Error

If after uploading data from a CompactFlash card used in an L3 uQAR recorder, the error in Figure 18 is shown, then the affected card needs to be quarantined and replaced.
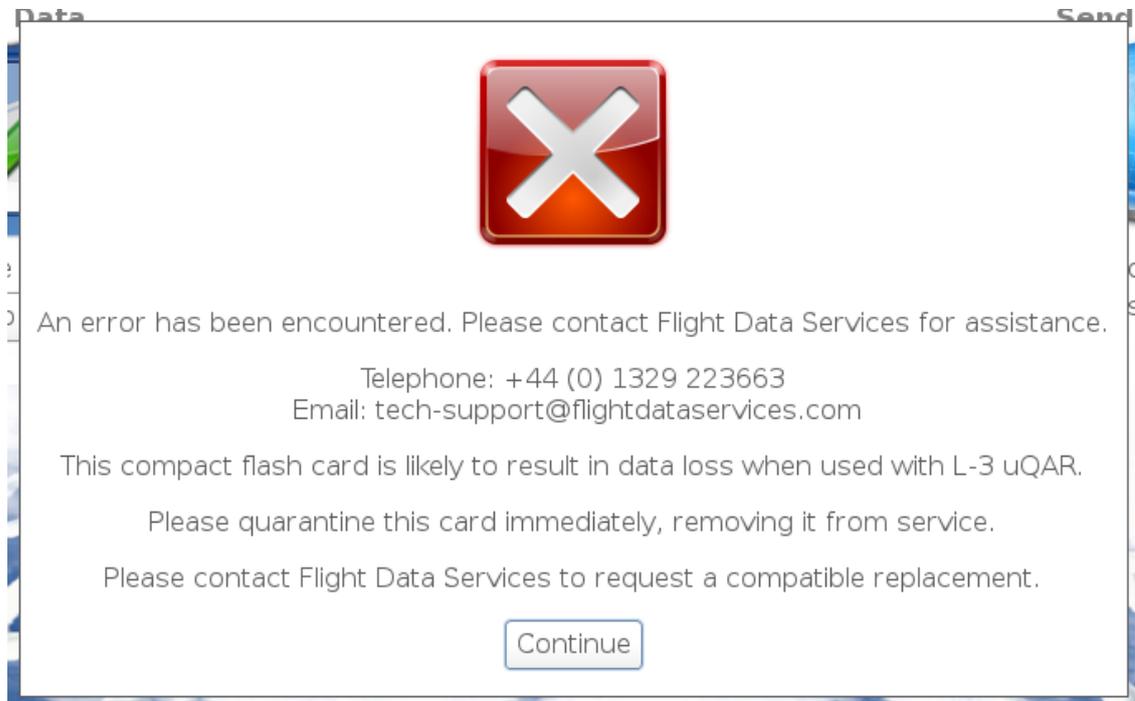

Figure 18: L3 uQAR quarantine error

If your CompactFlash cards were supplied by Flight Data Services then please return them for a one-for-one exchange - i.e. if you request 10 cards from Flight Data Services we will not charge you for any, as long as you send the 10 old cards back to us. Charges would only apply for any old cards not sent back to us.

If you would like to request new cards (on the proviso that you will be sending old cards, supplied by us back to us), then please confirm:

- Number of new cards required.

- Size of card required (options: 256MB and 512MB only)

- Contact name, email address, phone number and postal address for delivery.

If your cards were sourced by another supplier, please contact us for a cost to replace with known working cards.

As per the error message, to arrange delivery of the new cards please email:

tech-support@flightdataservices.com

Annex A – Software Installation and Updates

Supported Operating Systems

POLARIS transfer is only supported on the operating systems specified below:

Windows Version	Support
Windows XP Home	Not Supported
Windows XP Pro	Not Supported
Windows Server 2003	Not Supported
Windows Vista Basic	Not Supported
Windows Vista Home Premium	Supported
Windows Vista Business	Supported
Windows Vista Ultimate	Supported
Windows 7 Starter	Not Supported
Windows 7 Home Basic	Not Supported
Windows 7 Home Premium	Supported
Windows 7 Professional	Supported
Windows 7 Enterprise	Supported
Windows 7 Ultimate	Supported
Windows 8.1	Supported
Windows 8.1 Pro	Supported
Windows 8.1 Enterprise	Supported
Windows 10 Pro	Supported

POLARIS transfer is not supported when running on a virtual machine.

System Requirements

Hard Disk Requirements

POLARIS transfer requires a minimum of 2 gigabytes of hard disk space for downloading flight data, processing it and queuing it for upload.

Memory Requirements (RAM)

A system running POLARIS transfer will require at least 2 gigabytes of RAM.

Download Installation Package

The POLARIS transfer installation program should be downloaded from the Downloads section of the Flight Data Services website. Follow these instructions:

1. Using a web browser, browse to:

   http://www.flightdataservices.com

   Select the "downloads & links" link on the menu

   Select the "Customer Restricted Downloads" link

   Enter the Password: fokker50 and click "Submit"

   Download the POLARIS transfer for Windows installation program by clicking on the relevant link. Make sure the file is saved to the target computer's hard drive – do not just try to run the program from the web site.

Installing POLARIS transfer

Installation of the POLARIS transfer software requires that any previous version has been manually uninstalled. If you are unsure if the computer already has a version of POLARIS transfer installed, from the *Control Panel* open *Add or Remove Programs/Uninstall a Program.* In the list of installed programs, ensure that there is not a pre-existing entry for POLARIS transfer. If the entry exists, first click on it and then click on the *Remove/Uninstall* button that appears.

Once you are sure no previous version of POLARIS transfer is installed on the computer, right-click on the previously downloaded installation file (*POLARIS-transfer-(Version).exe*) and select "Run as administrator" (see *Figure 19*).
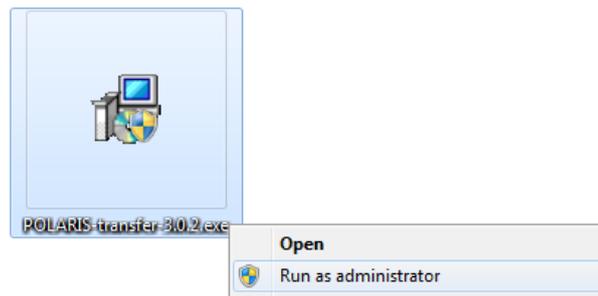
Figure 19: Run as administrator option

Note, if there is no "Run as administrator" option on the installation file, then try holding down the Shift key on your keyboard while right-clicking. Alternatively attempt step 8 (below), but use the installation file instead of the POLARIS transfer icon. If neither of these options work, then contact your IT department for assistance.

A pop-up warning may be displayed asking if you want to allow changes to be made to the computer. Answer in the affirmative to continue the installation:
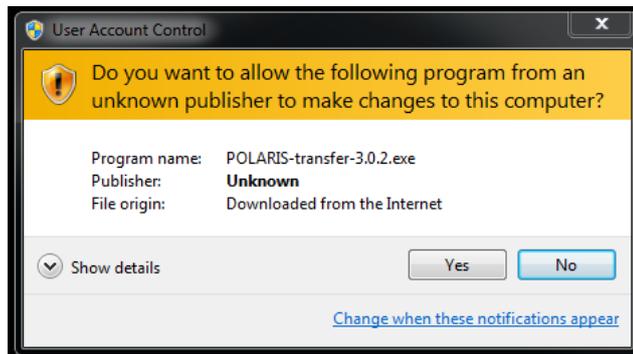

Figure 20: User Account Control

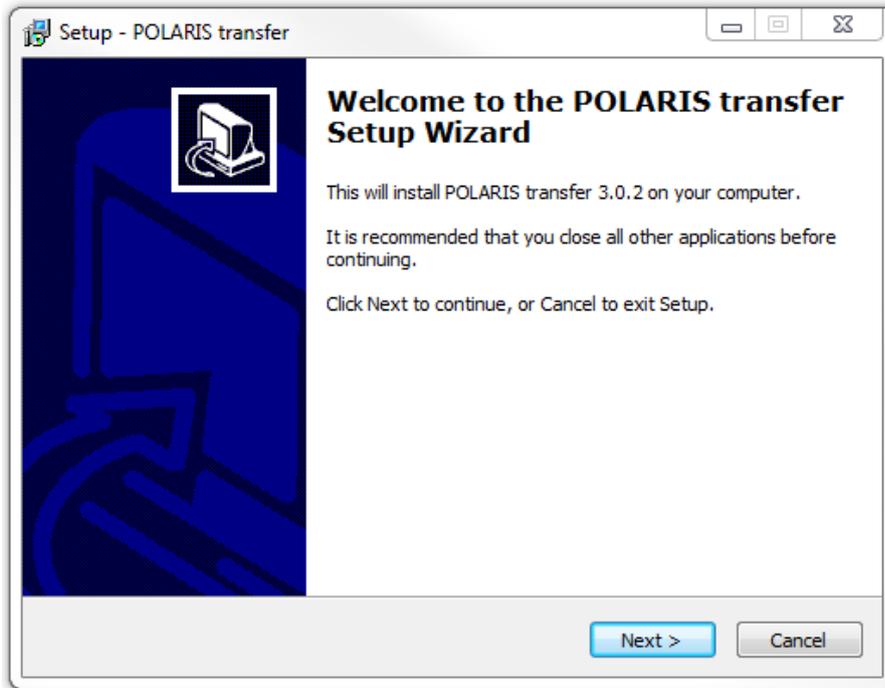Step 1: Click *Next >* to continue

Figure 21: Setup Wizard Step 1 - Welcome

Step 2: Read the License Agreement. If you agree to all terms and conditions then click *Next >* to continue, otherwise click *Cancel* and the installer will exit.
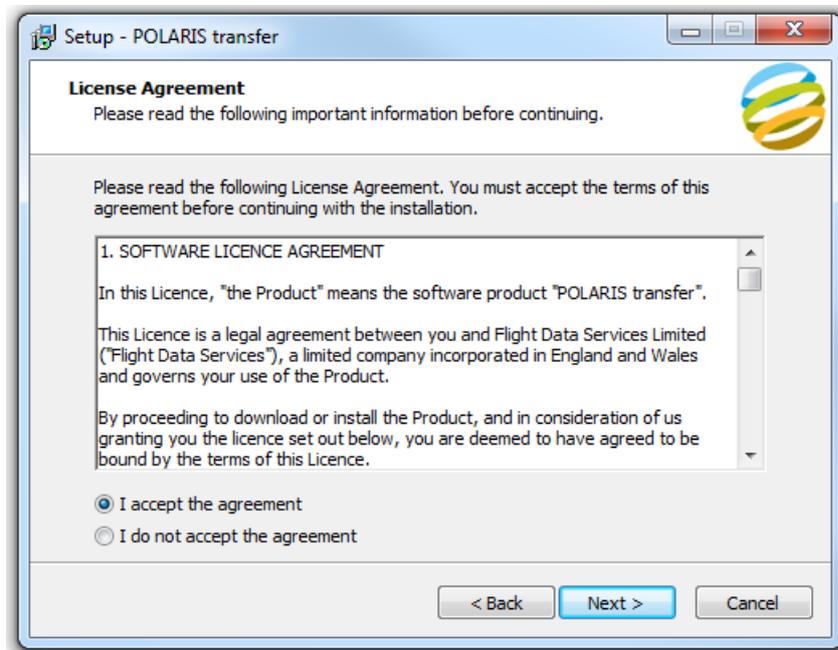

Figure 22: Setup Wizard Step 2 - License Agreement

Step 3: Accept the default installation location, or select a new location then click *Next >* to continue
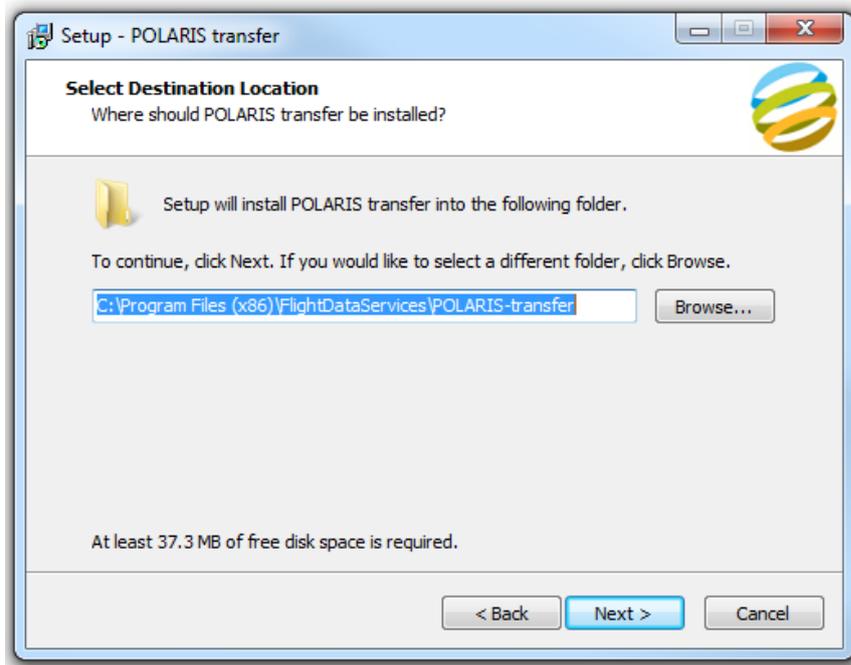

Figure 23: Setup Wizard Step 3 - Installation Location

Step 4: Accept the default Start Menu folder name or select a different one then click *Next >* to continue
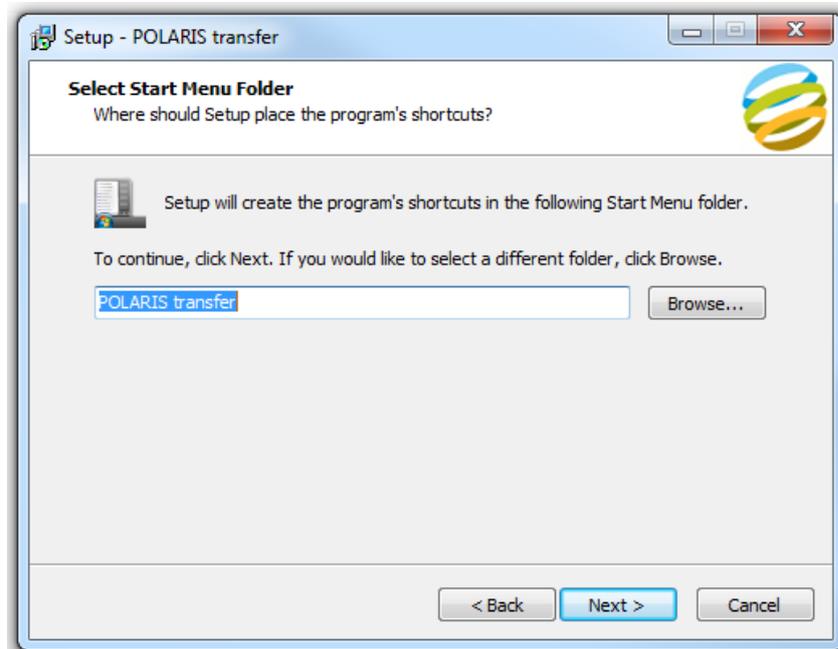
Figure 24: Setup Wizard Step 4 - Start Menu Folder Name

Step 5: The installer will now display setup information. If you are
satisfied with the settings, click *Install* to begin copying files,
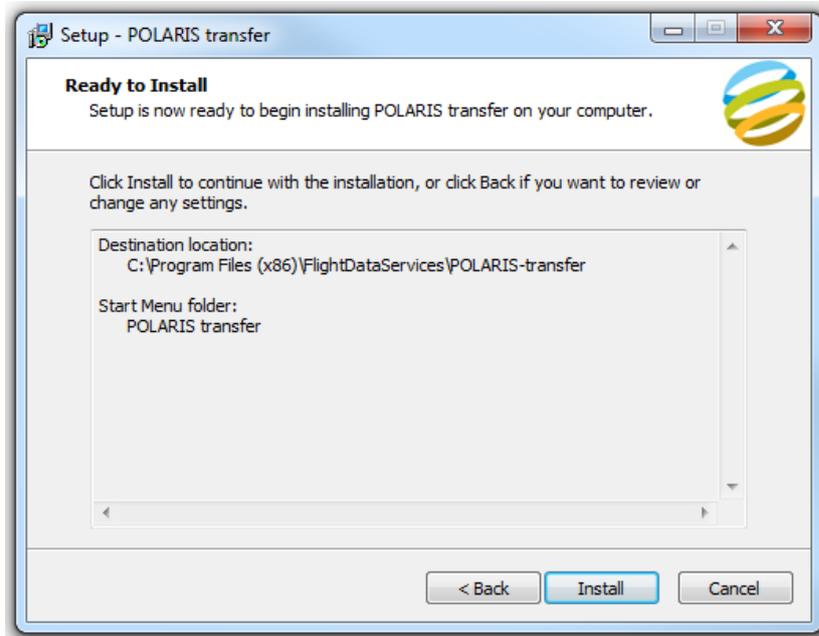otherwise click < *Back* and modify options in previous steps before
retuning to this one.

Figure 25: Setup Wizard Step 5 - Ready to Install

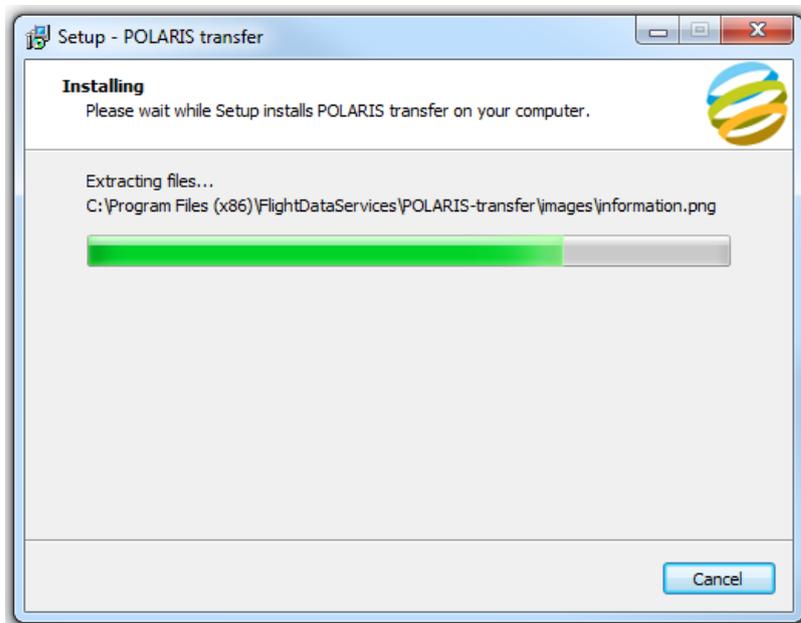Step 6: Watch the installation take place. Do not click *Cancel*

Figure 26: Setup Wizard Step 6 - Installing

Step 7: An entry for POLARIS transfer will have been automatically created in the Start Menu. Finish the installation process by clicking *Finish*.
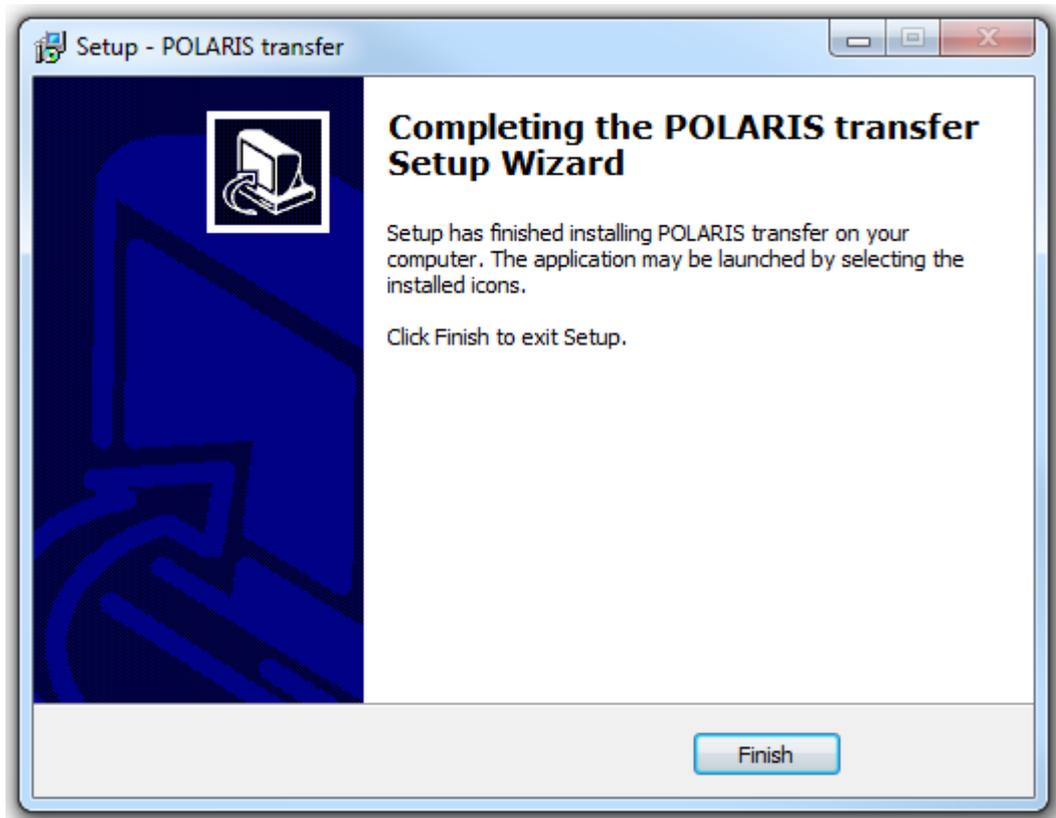

Figure 27: Setup Wizard Step 7 – Finished

Make sure you then follow the "Post Installation Steps" for your operating system below.

Post Installation Steps

For Windows Vista, Windows 7 and Windows 8.1

Step 8a: Before you run POLARIS transfer for the first time:

1. Right-click on the POLARIS transfer icon in the Start Menu
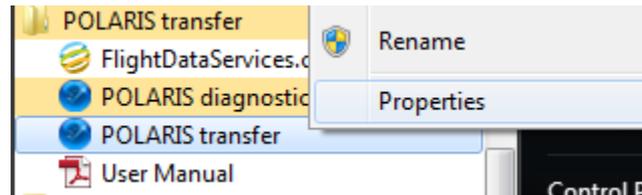
Select "Properties"

Figure 28: POLARIS transfer in Start Menu (Windows 7)

Select "Compatibility"

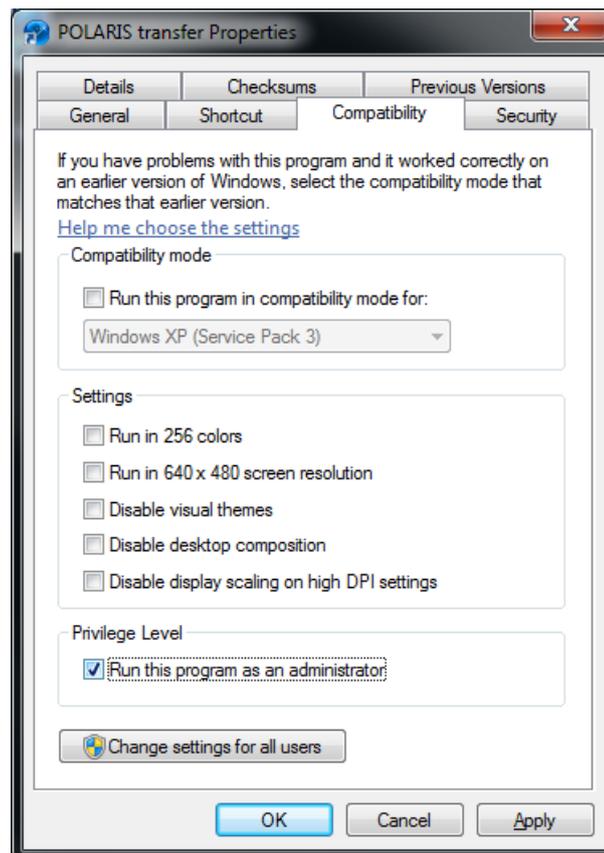Click the box next to "Run this program as an administrator"

Figure 29: POLARIS transfer Properties (Windows 7)

Click "OK"

For Windows 10

Step 8b: Before you run POLARIS transfer for the first time:

1. Right-click on the POLARIS transfer icon in the Start Menu
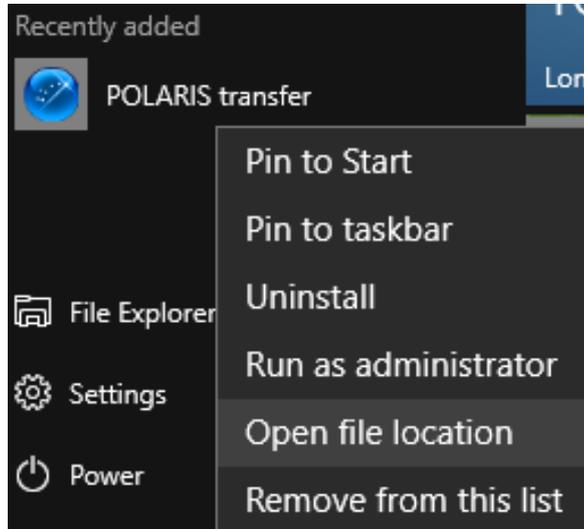
2. Select "Open file location"

Figure 30: POLARIS transfer in Start Menu (Windows 10)

Right-click on the POLARIS transfer icon in the File Explorer window
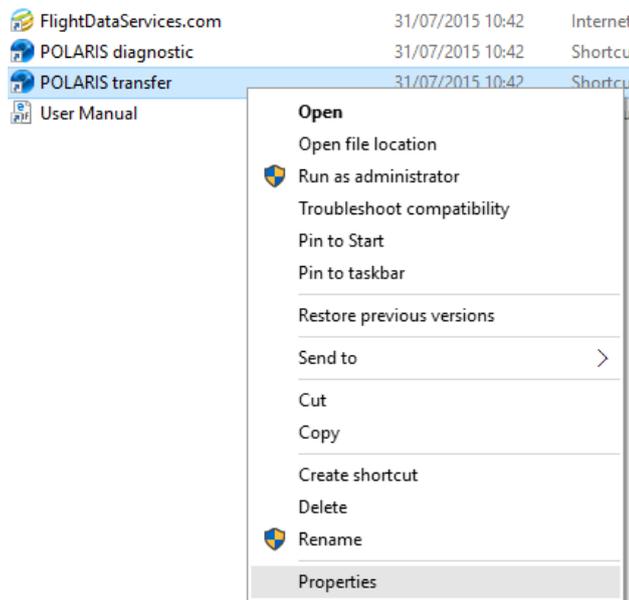
Select "Properties"

Figure 31: POLARIS transfer context menu

Select "Compatibility"

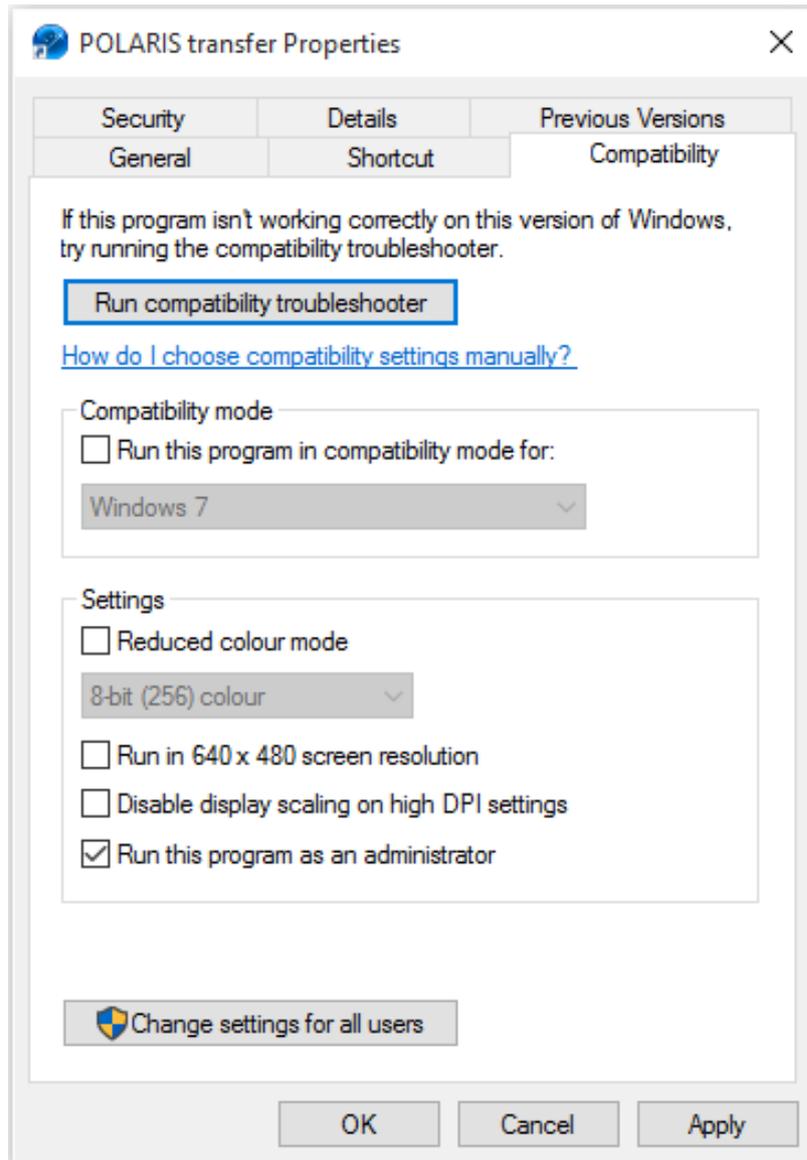Click the box next to "Run this program as an administrator"

Figure 32: POLARIS transfer Properties (Windows 10)

Click "OK"

Microsoft Visual C++ 2008 Redistributable Package (x86)

This software is available from Microsoft and a link is provided on the Customer Restricted downloads page on the Flight Data Services website (where you will have downloaded POLARIS transfer from, as shown above). If you do not already have this software installed, you will need to install it before POLARIS transfer will run.

Click the "Microsoft Visual C++ 2008 SP1 Redistributable Package (x86)" link to be taken to Microsoft's web site and download the file from there.

Run the installation program: VCREDIST_X86.EXE

Follow the installation steps to install the package.

Automatic Updates

POLARIS transfer performs automatic updates when new versions of the software are detected (see *Figure 33*). POLARIS transfer will resume normal operation when the update is complete.

Figure 33: POLARIS transfer update window

During the update process do not remove or insert media. The processing and transmission of FDM data will be automatically resumed once POLARIS transfer returns.

Uninstalling POLARIS transfer

To uninstall POLARIS transfer, first ensure that the software is not running. Open *Add or Remove Programs/Uninstall a program* from the *Control Panel*, then find and click on the entry for POLARIS transfer in the list of installed programs. Click on the *Remove/Uninstall* button to uninstall the software.

Annex B – Frequently Asked Questions

Computer Administration Privileges

POLARIS transfer must be installed and run by a user account with Computer Administrator privileges. This is required for the following functionality:

- Reading from and writing to raw devices without filesystems as required by the L3 υQAR recorder type.

- Sending an image of the media for manual recovery when corruption has been detected.

- Preparing media for re-use in aircraft where the recorder type requires a filesystem not supported natively by Windows as required by SAGEM recorders.

- Applying automatic updates to the POLARIS transfer software.

- Log messages used for supporting the POLARIS transfer software.

For these reasons, Flight Data Services will not be able to support POLARIS transfer if it has been installed or run by a user without Computer Administrator status.

See *Installing POLARIS transfer*, *Step 8* to run POLARIS transfer as an Administrator.

Unexpected Tail Number (L3 uQAR only)

When reading, POLARIS transfer displays a tail number to indicate which aircraft the flight data originated from.
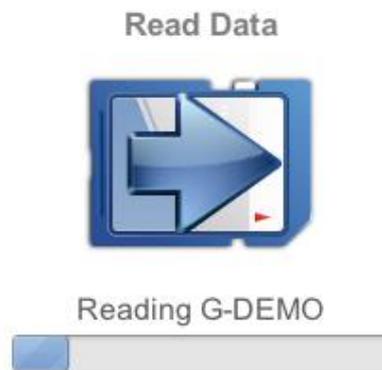

Figure 34: POLARIS transfer displaying aircraft tail number while reading

The tail number displayed corresponds to the first L3 uQAR serial number found within the data. POLARIS transfer will also upload and process flight data from any other aircraft found on the card.

Annex C – Change of Computer

POLARIS transfer software licenses are tied directly to the computer hardware they are first installed on. If the POLARIS transfer software is to be installed on a different computer, FDS Support must be contacted in order to configure the change-over of the software licence to ensure continued normal operation. Alternatively a new license can be arranged for the new computer if you would like to continue using the old computer too, in accordance with your contract with Flight Data Services.

Contact FDS on the support e-mail address provided *in Annex D – Support* to arrange the license move or additional license.

If you are just moving the existing hardware to a new location then you are not required to notify Flight Data Services.

Annex D – Support

Connection Troubleshooting

If POLARIS transfer continuously displays the No Connection to Upload Servers icon within the Send Data section of the interface, check the following:

- Ensure that any network leads or wireless antennae are securely connected to the computer.

- Check that any static IP or DNS requirements are configured correctly. In the case of a POLARIS transfer unit, consult the Network Configuration section of the hardware manual for configuration instructions.

- Check that you have access to the following Internet address and port range though your router/firewall:

  o IP Address Range: 77.245.74.128 – 77.245.74.254

  o Port: 443 (https)

Diagnostics Tool

A diagnostics tool is available with the POLARIS transfer program. If you are having problems with POLARIS transfer, contact FDS before you use the diagnostic tool; **do not** send diagnostics without first contacting FDS.

For hardware customers, the diagnostic tool can be opened by pressing the *Ctrl*, *Alt* and *d* keys on the on the transfer keyboard.

For software only customers the diagnostic tool is available from the Windows *Start* Menu, under:

POLARIS transfer -> POLARIS diagnostic

The initial Diagnostics Tool window will appear (see *Figure 35*). When FDS request a diagnostics report, click on the *Send Report* button. Clicking on the *Quit* button will close the Diagnostics window and cancel the diagnostics application.
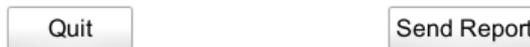

Figure 35: POLARIS transfer Diagnostics Tool window

Once the *Send Report* button has been clicked, the *Compiling report* window will appear (see *Figure 36*).

Figure 36: Diagnostics report being compiled

The Diagnostics Tool will take several minutes to check the POLARIS transfer system for faults and requires a working internet connection to transmit information to FDS.

When complete a new window will appear and display a diagnostics report.

The following report has been successfully transferred to Flight Data Services:

```
------------------ Device /dev/sdc: -------------------
storage.size: 0
storage.serial: TEAC_USB_HS-xD_SM_00000206F8CE-0:1
storage.partitioning_scheme:
storage.removable.media_available: 0
storage.bus: usb
block.device: /dev/sdc
storage.vendor: TEAC
storage.model: USB   HS-xD/SM
------------------ Device /dev/sdb: -------------------
storage.size: 0
storage.serial: TEAC_USB_HS-CF_Card_00000206F8CE-0:0
storage.partitioning_scheme:
storage.removable.media_available: 0
storage.bus: usb
block.device: /dev/sdb
storage.vendor: TEAC
storage.model: USB   HS-CF Card
```

Close

Figure 37: Diagnostics report successfully sent

If the diagnostics report was sent successfully (as shown in *Figure 37)*, Flight Data Services will contact you to discuss the results of the report and advise of any further action required.

Error! The diagnostics report could not be sent to Flight Data Services for the following reason:
[Errno -3] Temporary failure in name resolution
Either test your network connection and try again, or leave the report open and contact Flight Data Services.
Telephone: +44 (0) 1329 223663
Email: support@flightdataservices.com

```
------------------ Device /dev/sdd: -------------------
storage.size: 0
storage.serial: TEAC_USB_HS-xD_SM_00000206F8CE-0:1
storage.partitioning_scheme:
storage.removable.media_available: 0
storage.bus: usb
block.device: /dev/sdd
storage.vendor: TEAC
storage.model: USB   HS-xD/SM
------------------ Device /dev/sdb: -------------------
storage.size: 0
storage.serial: Generic_Flash_Disk_E100B496-0:0
storage.partitioning_scheme: mbr
storage.removable.media_available: 1
storage.bus: usb
block.device: /dev/sdb
storage.vendor: Generic
storage.model: Flash Disk
```

Close

Figure 38: Diagnostics report failed sending

If the diagnostics report could not be sent (as shown in *Figure 38*), either test your network connection and try again or contact Flight Data Services to troubleshoot the problem.

Contact Details

During UK office hours telephone +44 (0) 1329 223663

Outside UK office hours e-mail tech-support@flightdataservices.com

Aircraft On Ground support is available for urgent requests out of UK office hours on +44 (0) 7738 286141. A charge will be made for this service.