ECCN 9E990

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Technical Bulletin

TB No. AA-20057
Revision A
June 23, 2021

SUBJECT: 429 HUMS Software Upgrade

PARTS AFFECTED: **Aeronautical Accessories Health and Usage Monitoring System (HUMS) Kit -** P/N 429-260-001

MODELS AFFECTED: Bell Textron Canada Limited model 429 helicopters with subject HUMS Kit installed in accordance with FAA STC SR09536RC-D.

COMPLIANCE: Compliance with this bulletin is per Customer's option.

DESCRIPTION: This Technical Bulletin is being issued to allow the owner to upgrade their HUMS Kit to the current software configuration, V5.7 SP2B, Database Configuration V51. This new software changes the regime triggers to allow the system to capture data at lower airspeeds and changes some of the CI thresholds which were causing false exceedances.

Revision A of this Technical Bulletin updates the 1796-0012-GP Software Installation Instructions in Appendix A, to revision F. This revision changes the software updating procedure from an automatic, to a manual, process - providing a more reliable method for installing the software update. Additionally, the processor firmware to select-at-installation is corrected to "1134-1100-DD-00-REVOM-V60E.xsvf" or, "1134-1100-DD-02-REVOM-VA60E.xsvf".

FAA/ODA APPROVAL: The engineering aspects of this Technical Bulletin are FAA/ODA approved.

MANPOWER: Approximately 2.0 man-hours.
(Man-hours are based on hands-on time and may vary with personnel or facilities available).

IF OWNERSHIP OF AIRCRAFT HAS CHANGED, PLEASE FORWARD THIS BULLETIN TO NEW OWNER

LOG OF REVISIONS

Date	Revision	Description	Affected Pages
8/13/20	NR	Original Release	All
6/23/21	A	Revised Sections 5.1 and 5.2. Revised Appendix A Document No. 1796-0012-GP, Revision E to Revision F.	4 8

Reviewed:

Engineering

1.0 MATERIALS REQUIRED

1.1 UPGRADE HUMS SOFTWARE TO CURRENT VERSION V5.7 SP2B, V51

Label P/N 1209-3196-PF:

1. Material Type: Brady Label THT-17-425-3 or equivalent
2. Text Color / Font Size: Black / 9 point
3. Background Color: White
4. Dimensions: Per Figure 2

Label P/N 1209-3198-PF:

1. Material Type: Brady Label THT-166-424-2 or equivalent
2. Text Color / Font Size: Black / 9 point
3. Background Color: White
4. Dimensions: Per Figure 3

NOTE

In lieu of making labels, the following Upgrade Kit is available from Aeronautical Accessories.

TABLE 1 - PARTS LIST

412-262-060 UPGRADE KIT

Qty	Part Number	Description	Figure
1	1209-3196-PF	Label	2
1	1209-3198-PF	Label	3

NOTE

It is recommended S/N 57001-57193 a/c have TB AA-15074 - Part 2, ONLY – (addition of second ground wire for Signal Ground) be implemented prior to initiating this software upgrade, if not already accomplished.

2.0 WEIGHT AND BALANCE

Not affected

3.0 PUBLICATIONS AFFECTED

Instructions for Continued Airworthiness, report AA-09041

4.0 ADDITIONAL INFORMATION

Any questions regarding this bulletin should be addressed to:

Aeronautical Accessories
Attn: Technical Support
450 Industrial Park Rd
Piney Flats, TN 37686-4419
Email: techsupport@aero-access.com
Toll free: 1-800-251-7094

5.0 ACCOMPLISHMENT INSTRUCTIONS:

5.1 DOWNLOAD INSTRUCTIONS

1. Go to the Bell Rotorcraft MissionLink web portal:

   https://bellportal.textron.com/en/Customer/Pages/default.aspx

   If customer does not have a username and password, contact Bell Product Support Engineering at productsupport@bellflight.com .

2. From the "Resources" Tab at the top, select "Other Files" from that tabs drop down menu to open the "File Browser" page.

3. Under the "File Name" column, select "Bell 429 5.7 SP2B GBS CD Image.zip" to download the PC-GBS release 5.7 SP2B – Bell 429-CD image from the web portal:

FILE NAME	DESCRIPTION
Bell 429 5.7 SP2B GBS CD Image.zip	429 Version 5.7 SP2B, Version 51

5.2 INSTALLATION INSTRUCTIONS

1. Open/unzip the downloaded Bell 429 5.7 SP2B GBS CD Image.zip file.
2. Open the "*GBS_5_7_204" folder.*
3. Follow the Honeywell Software Installation Instructions (Document No. 1796-0012-GP, revision F, or later approved revision) to install the Bell 429 V51 Configuration File on the HUMS Processor (see Appendix A).
4. Refer to the following information when verifying the system configuration:

Tail Number: (*Aircraft Serial Number*)

Aircraft Setup File: **Setup_429_V51.OBS**

OBS Version: **5.7.207**

Firmware Revision: **A60E**

5. The 'System Info' page should represent the following example after successfully loading the 5.7 SP2B V51 software (see Figure 1).

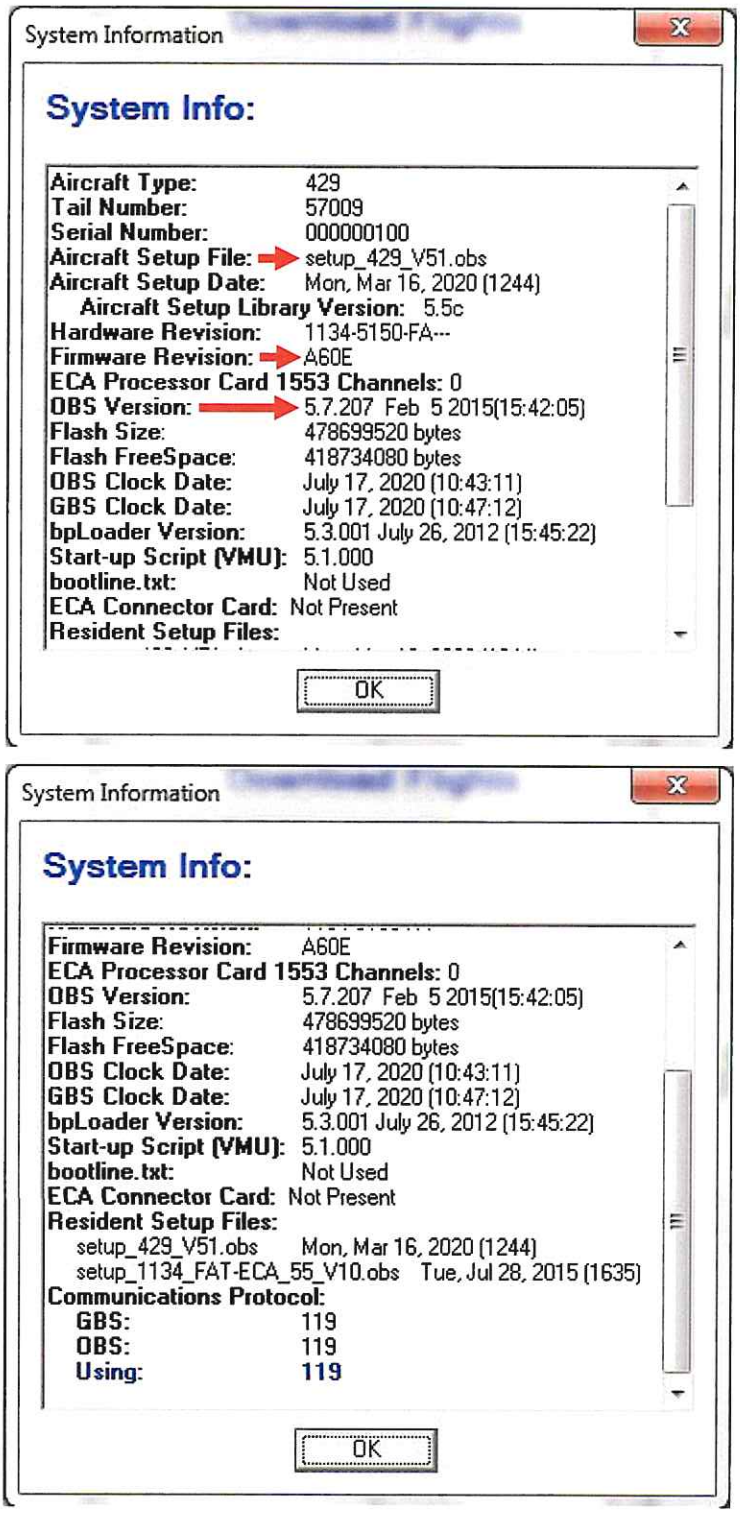


FIGURE 1 – SYSTEM INFO PAGE REPRESENTATION

5.3 PROCESSOR LABELING

1. Fill in the required data on the 429 HUMS Processor Label (1209-3196-PF) as shown in Figure 2. Install Label per Document No. 1796-0012-GP.
2. Verify the information on the existing Label (1209-3198-PF) reflects the current software version. Update the Label, if necessary, as shown in Figure 3.
3. Software update complete.

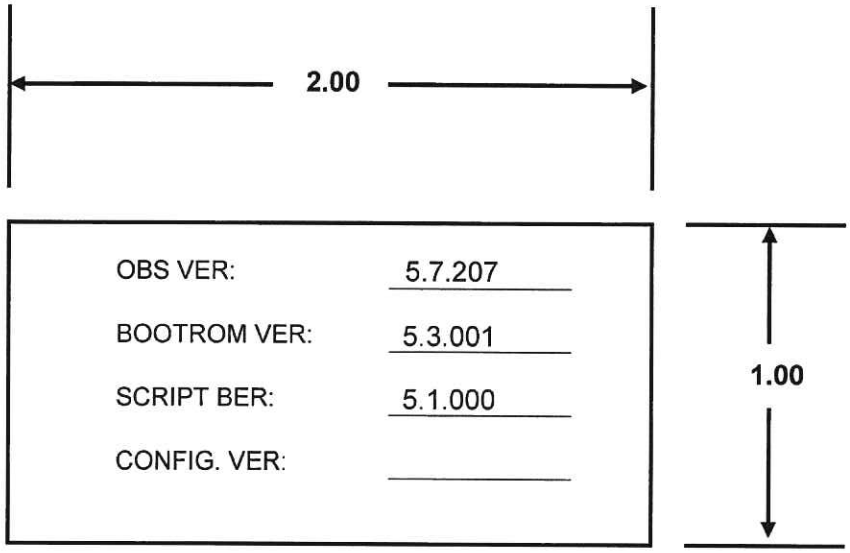


FIGURE 2 - LABEL, P/N 1209-3196-PF

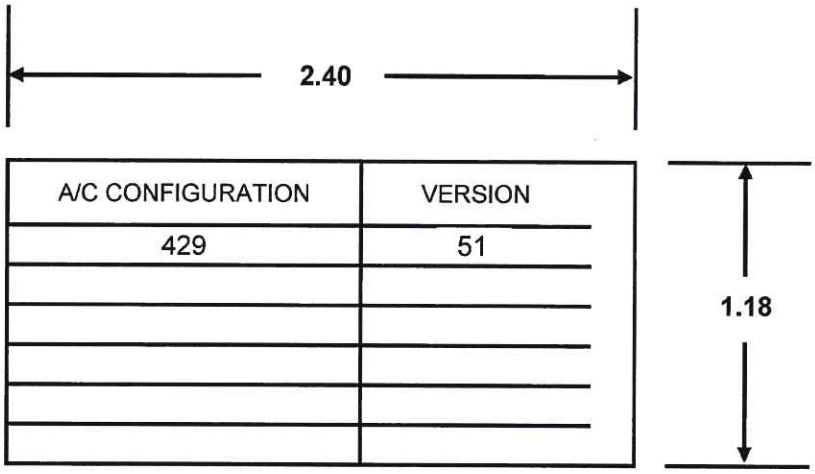


FIGURE 3 - LABEL, P/N 1209-3198-PF

6.0 SPECIAL EMPHASIS – TAIL ROTOR BALANCE:

NOTE

429 HUMS V51 database has two different tail rotor coefficients due to the locations of the tail rotor sensor. When balancing the tail rotor choose the correct algorithm based on aircraft serial number as shown in Table 2 and Figure 4 below. Do not use algorithm set for (Tail Rotor, T/R Flight, Tail Auto) that has "TRG" in the nomenclature.

TABLE 2 – ALGORITHM SELECTIONS BY A/C SERIAL NUMBER

Aircraft Serial Number	Regime	Algorithm Set
57001 -57193	Tail Rotor Balance Manual Acquisition	Tail Bal Lrs
57001 -57193	Tail Rotor Balance Auto Acquisition	LRS for Tail Auto
57194 - SUB	Tail Rotor Balance Manual Acquisition	Tail Bal – Hvy - Lrs
57194 - SUB	Tail Rotor Balance Auto Acquisition	Tail Auto – Hvy - Lrs

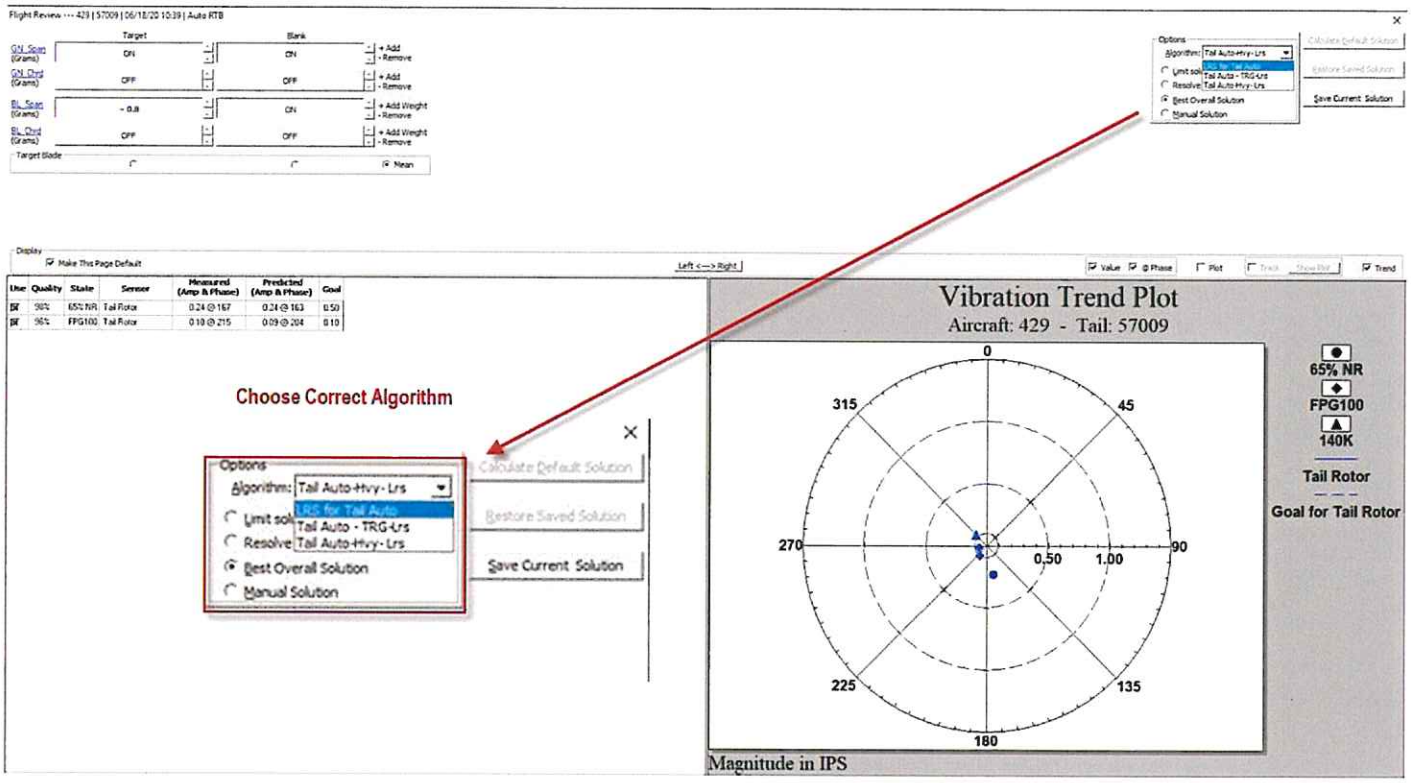


FIGURE 4 – ALGORITHM SELECTION SCREEN

APPENDIX A

Document No. 1796-0012-GP

ECA Software Installation Instructions for Bell 429 & PC-GBS

Honeywell

Document No. 1796-0012-GP

ECA Software Installation Instructions

For

Bell 429 & PC-GBS

Revision F

Date: 7 May 2021

Prepared by
Honeywell Aerospace
21111 N. 19th Ave
Deer Valley, AZ 85027

Applications	Benjamin Schnur / HON	**Date:** 6/17/21
Systems Lead	Roger Zetterberg / HON	**Date:** 6/17/2021

Revision History

Revision Number	Date	Prepared By	Description
-	23 Feb 2011	Chuck Kemp	Initial Release
A	26 Jan 2012	JP Cain	Update to add Re-import instructions for data collected if engines are not started. Instructions formatted to be generic and not specific to software version.
B	11 Feb 2014	RR/JV	Updated the document to be more user friendly for 5.4 to 5.5 software upgrade. Incorporated customer feedback.
C	18 Jan 2017	M. Hunt	Updated document upgrade from v5.5 to v5.7. Include additional screen shots and text.
D	04 10/2017	JL Cowgill	Added
E	11 May 2017	Megan M.	Updated for 5.7 SP2B
F	7 May 2021	R. Zetterberg	Revised to Manual update process

TABLE OF CONTENTS

1. INTRODUCTION

NOTE

This instruction outlines the information necessary to install the ground based software and to upgrade the onboard system. When installing the aircraft configuration file, the user is reminded to use the versions specified in the Bell Instruction. The following document uses PC-GBS v5.7.204, OSIF v5.7.207, 429_51.CSIF as examples throughout the document for the upgrade. Final validation shall be done against versions specified.

Important:

The following upgrade instructions assume that the system being upgraded is loaded with OBS and PC-GBS **V5.5.XXX** production releases.

1.1 Overview

The HUMS 1134 system may require up to three software elements to be configured correctly in order to successfully accomplish a software update:

1. PC-GBS (the Ground Station Software)
2. Configuration Setup Installation File (*.csif file)
3. On-Board System Setup File (*.obs, extracted from the .osif; this may include firmware updates)

The PC-GBS software including CSIF and OSIF components needed to perform this update can be downloaded from the Bell MissionLink as a single zipped file 'Bell-429-5.7 SP2B.zip' or located on a Honeywell provided CD. Please follow steps elaborated in Section 3.1.

NOTE

1. PC-GBS is delivered as an archive file and must be extracted before use. To extract the files from the archive, first create a temporary directory on your local hard drive (for example C:\Installer-PCGBS). Then extract the files from the .zip archive to that location using WinZip or any other available program that will process *.zip files. WinZip is available from http://www.winzip.com/.
2. The onboard software (.OSIF) and the configuration information file (.CSIF) may also be delivered as an archive (zip) file due to FTP browser preferences, but need to have the proper extensions. This should be detected and corrected upon download. Save the file as 'All Files' file type and fill in the file extension to match the type being downloaded (e.g. .CSIF or .OSIF).
3. During the upgrades, if existing flight data is present, you will be asked if you want to re-import the existing data. It is recommended that you select 'No'.

4. Depending on the amount of data present, the importing process could take hours. Data can be imported at a later time using the Import Data -> Raw Data menu selection if 'No' is selected.
5. If prompted to re-map sensors, it is recommended to select 'Ignore' and pressing 'OK'.

2. DESCRIPTION OF ACRONYMS AND ABBREVIATIONS

CSIF	**C**onfiguration **S**etup **I**nformation **F**ile
ECA	**E**mbedded **C**ommon **A**rchitecture
HUMS	**H**ealth and **U**sage **M**onitoring **S**ystem
OBS	**O**n **B**oard **S**oftware
OSIF	**O**n-Board **S**oftware **I**nstallation **F**ile
PC-GBS	**P**ersonal **C**omputer-**G**round **B**ased **S**ystem
XSVF	**X**ilinx **S**erial **V**ector **F**ormat

3. PRE-REQUISITES AND SEQUENCE OF UPGRADING HUMS SOFTWARE

Be sure that you have administrative rights to install PC-GBS. These instructions are to be used for Windows XP and Window 10 installation. If using Windows 7, please refer to Section 4.1 to enable Windows Compatibility mode. It is also required that the user's PC conforms with the US Date Format.

The following steps are covered in detail:

- Installing version 5.7.204 PC-GBS or later, as specified in the Bell Instruction.
- Loading CSIF Bell 429 v51 or later, as specified in the Bell Instruction.
- Loading OSIF Bell 429 OBS v5.7.207 or later, as specified in the Bell Instruction.
- Checking the existing software versions.
- Connecting to the processor and uploading software and configuration setup.
- Verifying the load completion and software versions.

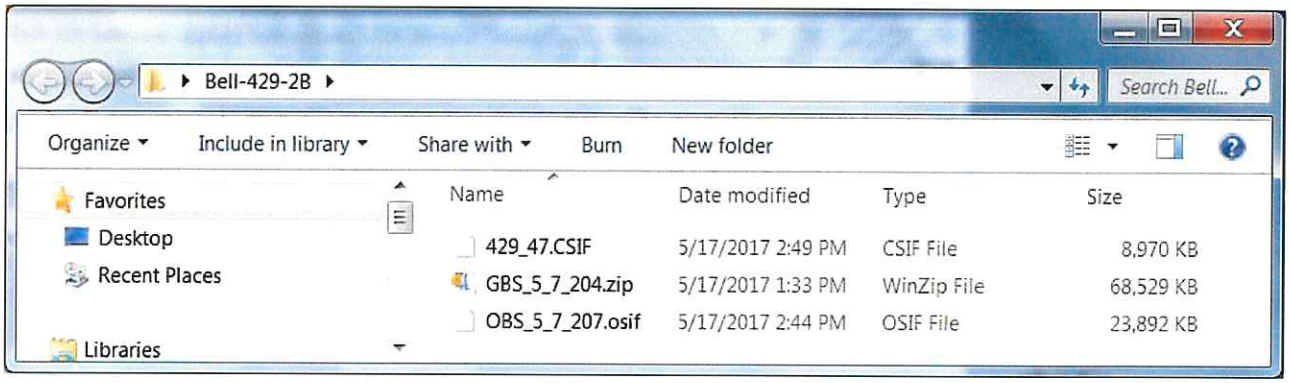
3.1 Copying the installation files

The Software package is installed from either of these 2 locations:

- Bell MissionLink
- Honeywell provided CD

1) Download from Bell MissionLink Website under the "Resources Tab"

2) The file should be unzipped using WinZip or other unzip utility to the Desktop. Similarly, unzip the 'GBS_5_7_204.zip' file.



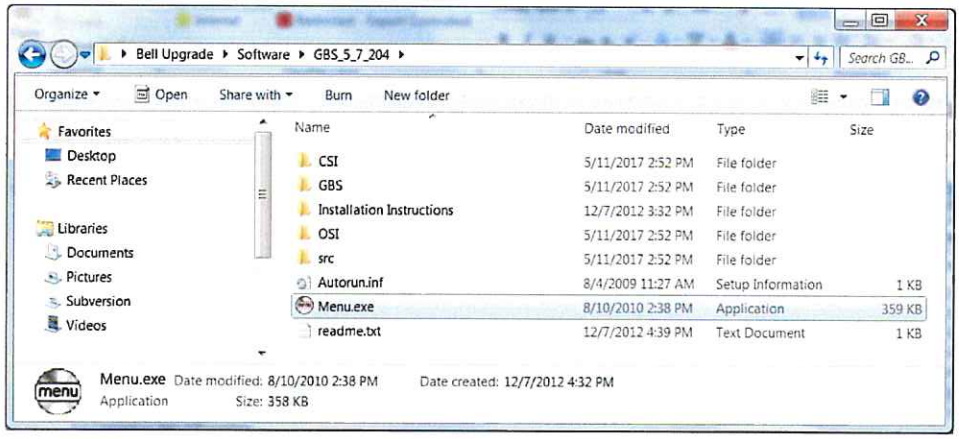
3.2 Upgrading to version 5.7 SP2B or later

3.2.1 Installing PC-GBS version 5.7.204 or later (as specified in the Bell Instruction)

From the Honeywell CD image or Bell MissionLink: Use Option 2 of the Menu to Install PC-GBS 5.7.204.

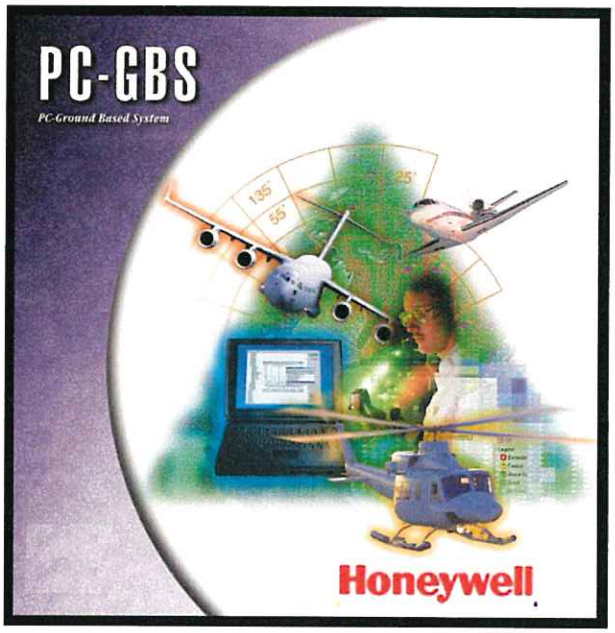
Procedure for installing from the Menu (Bell MissionLink):

1) Navigate to the unzipped 'GBS_5_7_204.zip' file and double-click on 'Menu.exe'. Follow from step 5 in the 'Procedure for installing from the Menu (CD image)' below.



Procedure for installing from the Menu (CD image):

1) The user will use the following CD image.



2) If the PC-GBS installer utility is not already running, insert the CD into the PC and 'Autorun' will start. The CD includes instructions and a Product Key inside the CD cover if required.

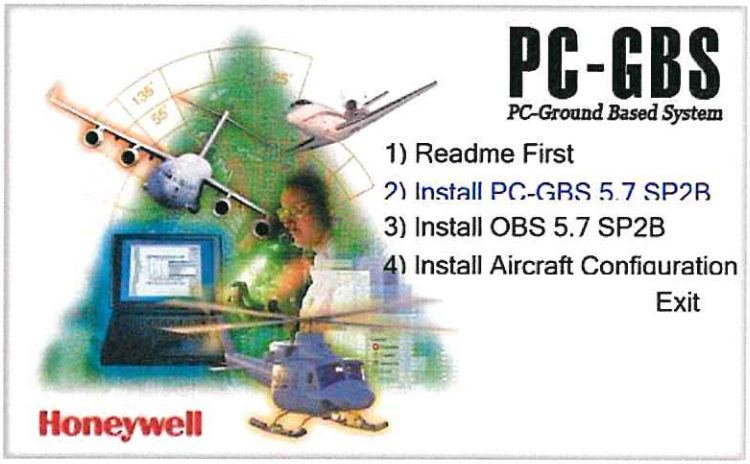
3) Enter the Product Key if prompted during the installation.

4) If 'Autorun' does not start automatically the user can navigate to the 'Menu.exe' on the CD and upon double-clicking on that the installation utility will open.

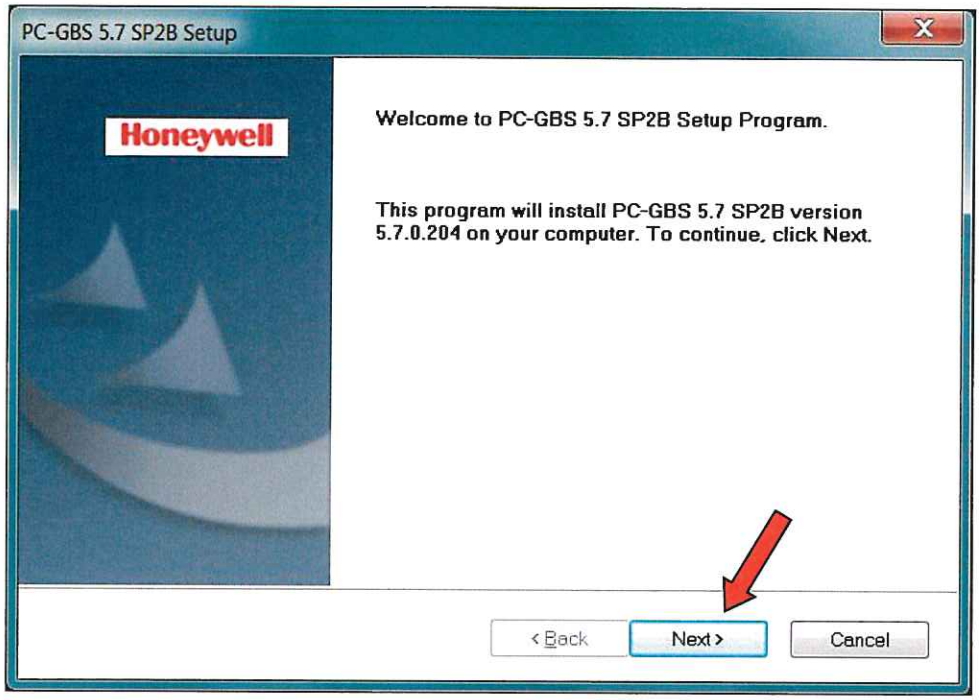
Name	Date modified
CSI	11/8/2013 1:03 PM
GBS	11/8/2013 1:03 PM
OSI	11/8/2013 1:03 PM
src	11/8/2013 1:03 PM
Autorun.inf	8/4/2009 11:57 PM
Menu.exe	8/11/2010 3:08 AM
readme.txt	2/2/2012 2:58 AM

5) This will launch the menu screen of PC-GBS installation utility.

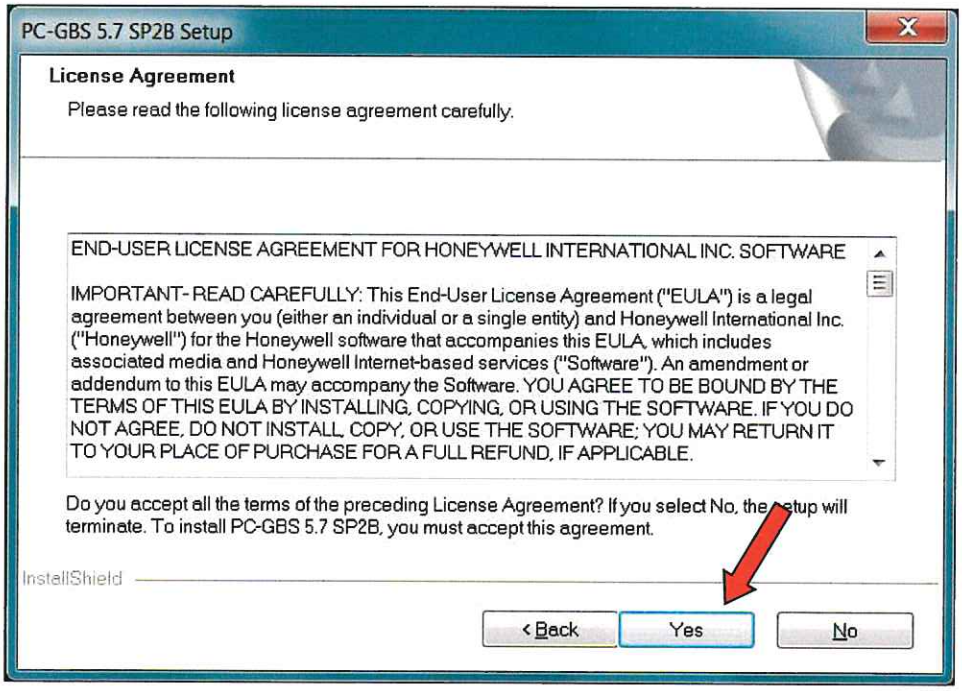
6) Click Option 2 to install PC-GBS.



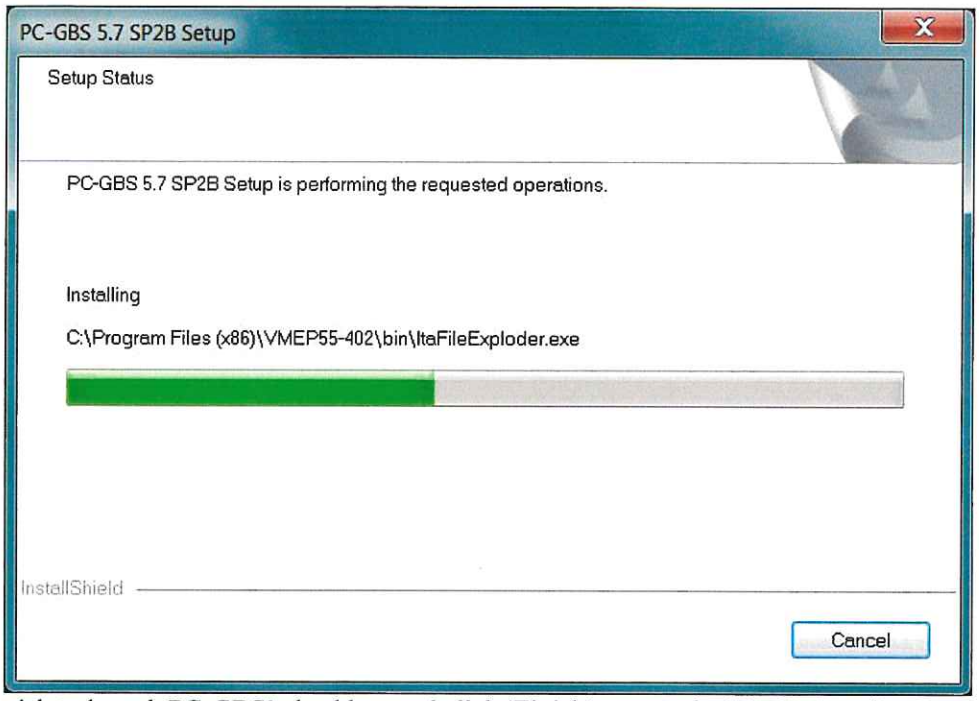
7) Click the 'Next >' button. (This will upgrade and overwrite the existing PC-GBS 5.5.402. If loading more than one version of PC-GBS, refer to Appendix Section 4.3.)



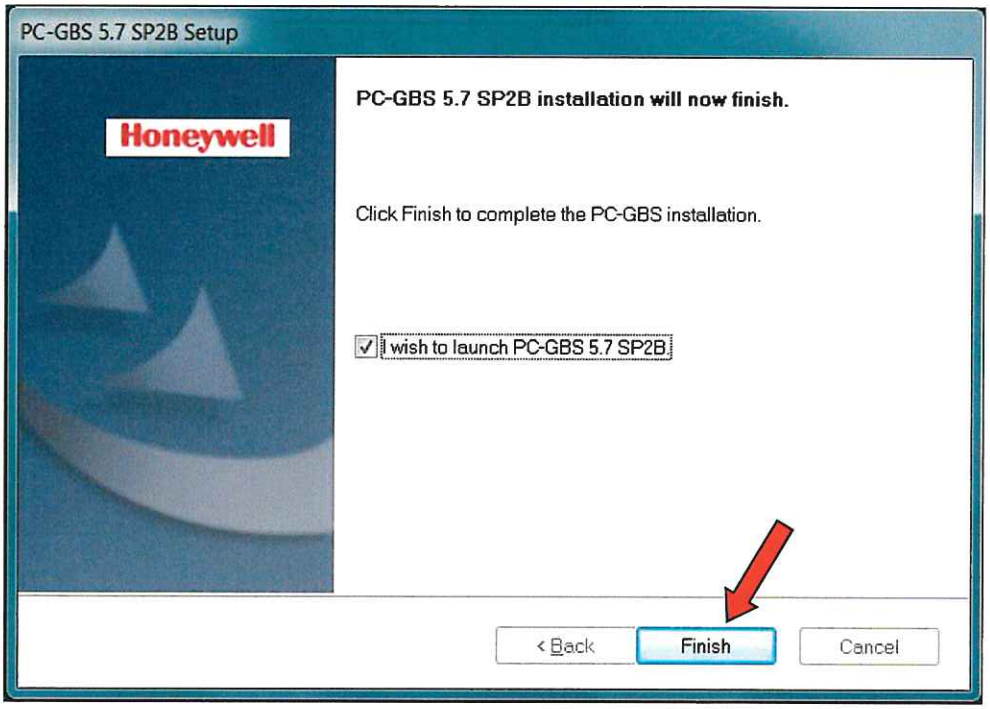
8) To proceed, click 'Yes'. The Setup will start installing the PC-GBS.



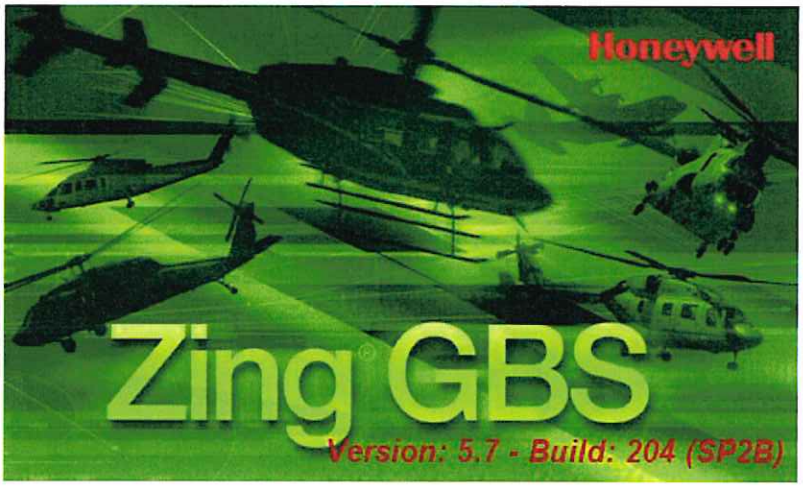
9) It shall start the installation.



10) Check 'I wish to launch PC-GBS' checkbox and click 'Finish' to start the PC-GBS application.



11) This will launch PC-GBS. Verify that the splash screen shows the expected version (as per the Bell Instruction).



12) Exit out of PC-GBS program.

3.2.2 Installing Bell 429 configuration Setup

From the Honeywell CD image or Bell MissionLink:

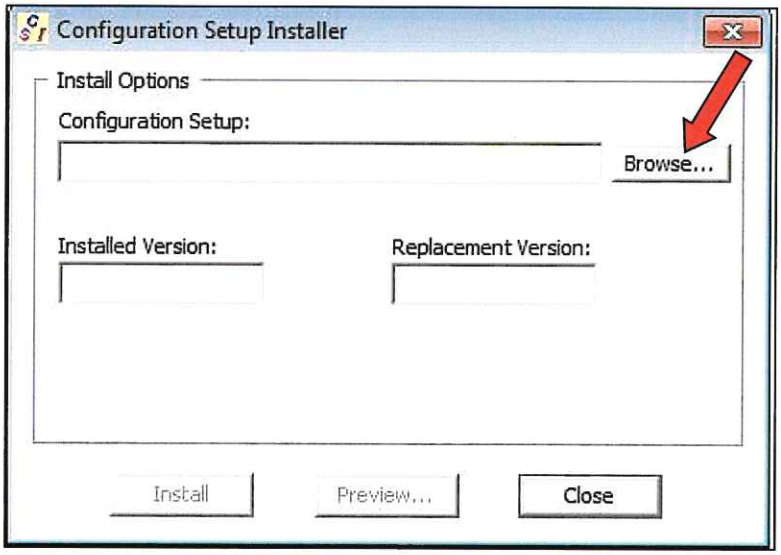
Use Option 4 of the Menu to Install Setup Configuration (429_51.csif).

Procedure for installing from the Menu:

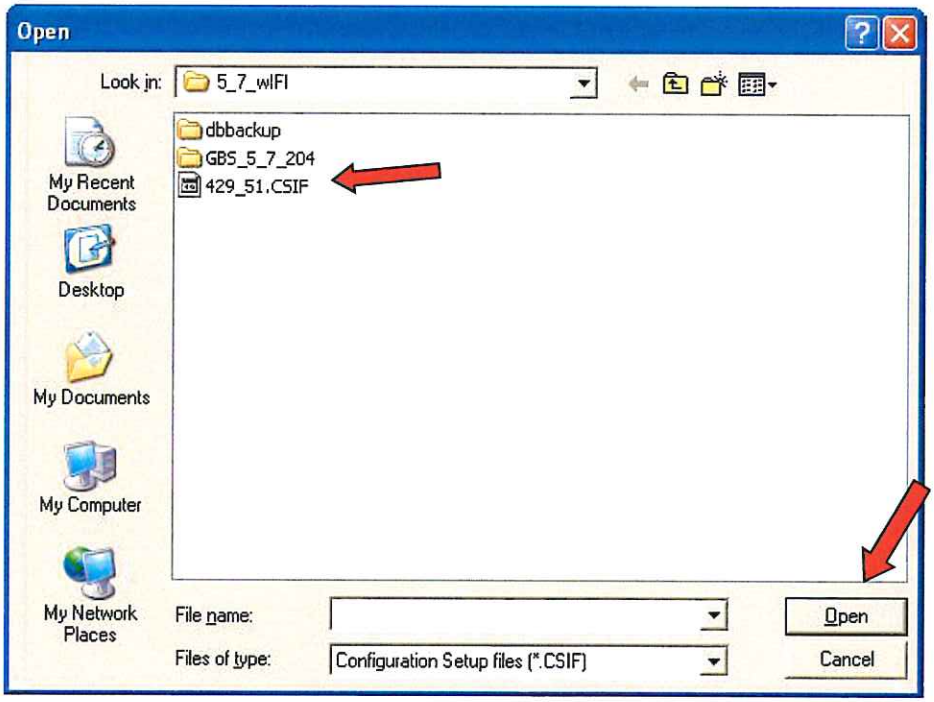
1) Use Option 4 of the PC-GBS installer Menu to Install the Configuration Setup 429_51.csif.

2) Select 'Browse…' and navigate to the CSIF file either previously downloaded from the Bell MissionLink or from a CD-ROM.

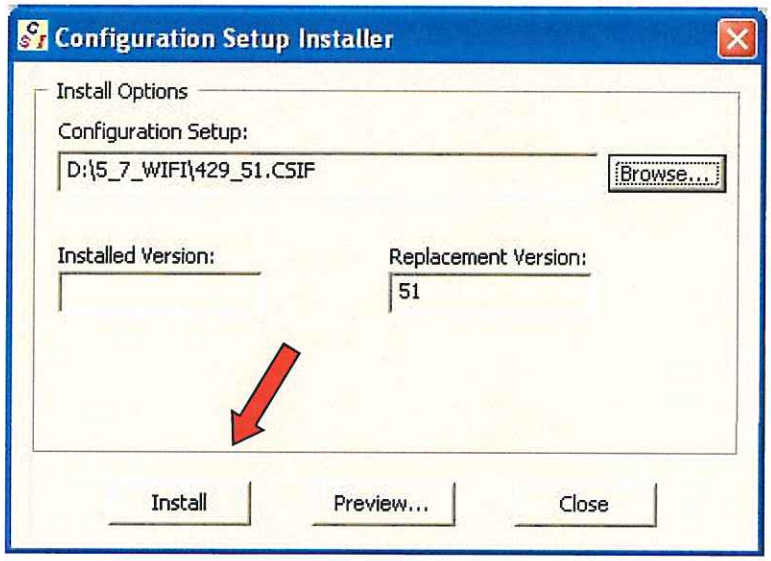
Note
If the 'csif' file is automatically selected by the tool, you can ignore this step.



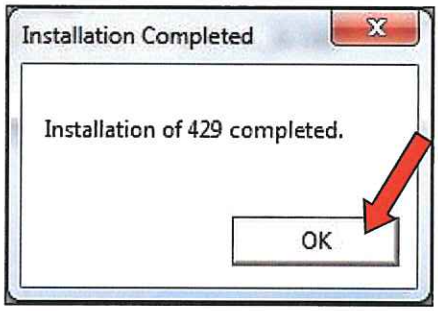
3) Select '429_51.CSIF' and click 'Open'.



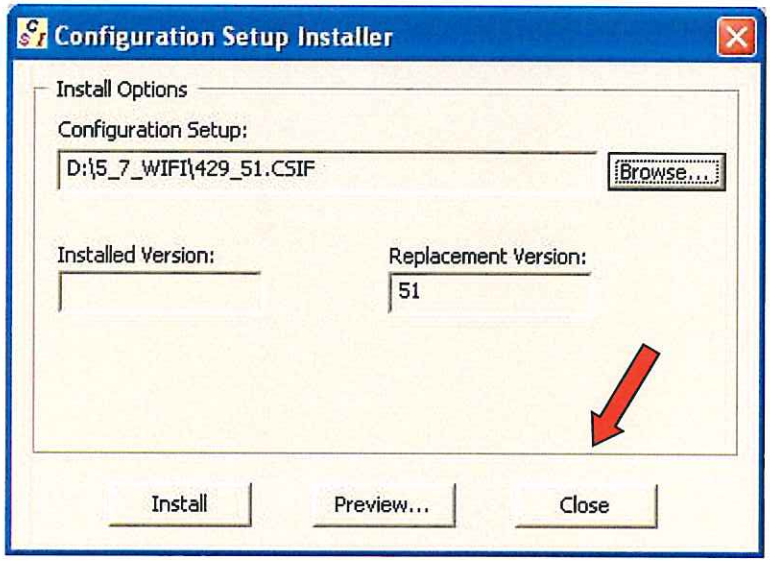
4) Click 'Install'.



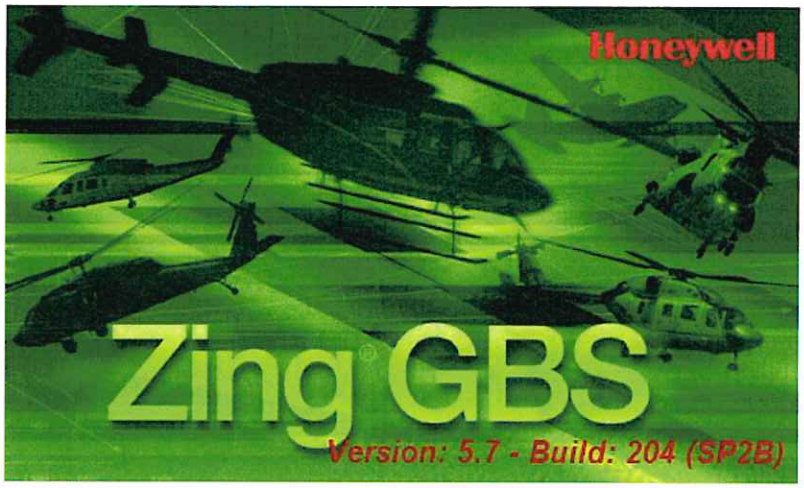
5) Click 'OK'.



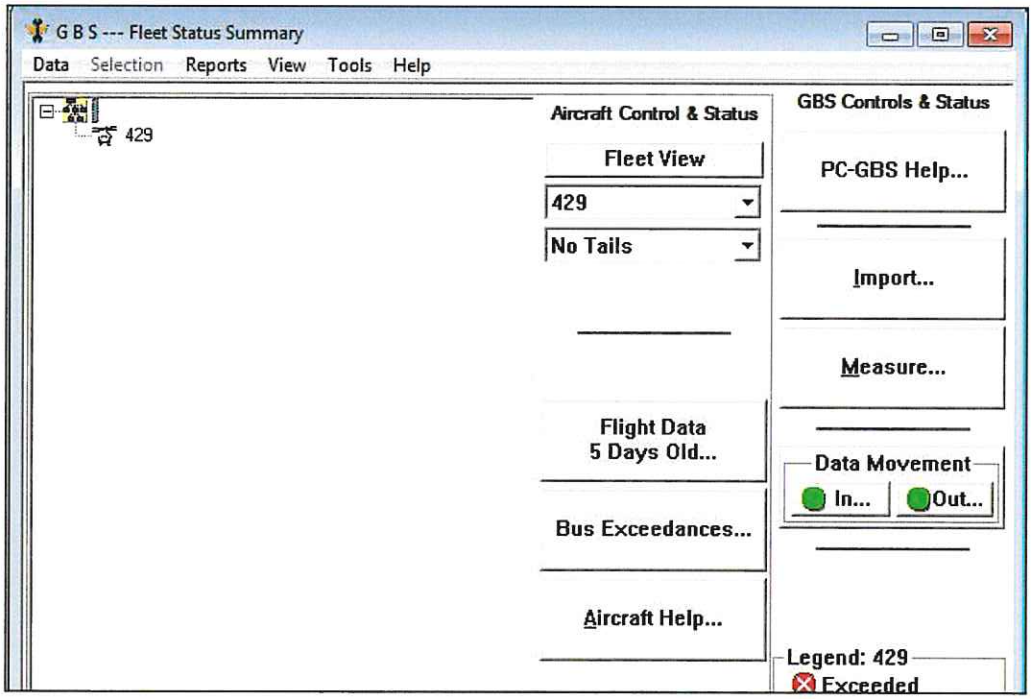
6) Click 'Close'.



7) PC-GBS will automatically restart.



8) Bell 429 v51 is now installed to PC-GBS.



3.2.3 Installing Bell 429 OSIF

From the Honeywell CD image or Bell MissionLink:

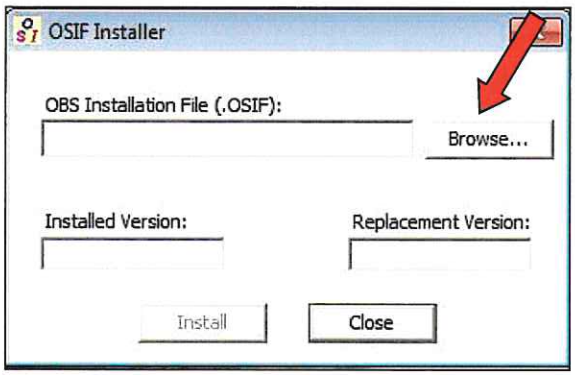
Use Option 3 of the Menu to Install OBS Release (OBS_5_7_207.osif).

Procedure for installing from the Menu:

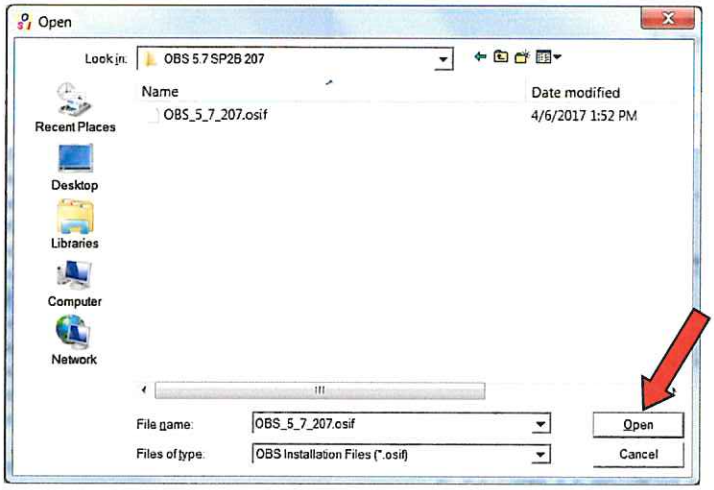
1) Use Option 3 to Install OBS Release 5.7.207 or later (as specified in the Bell Instruction).

2) Browse to the target OSIF file (OBS_5_7_207.osif or later) and click Open.

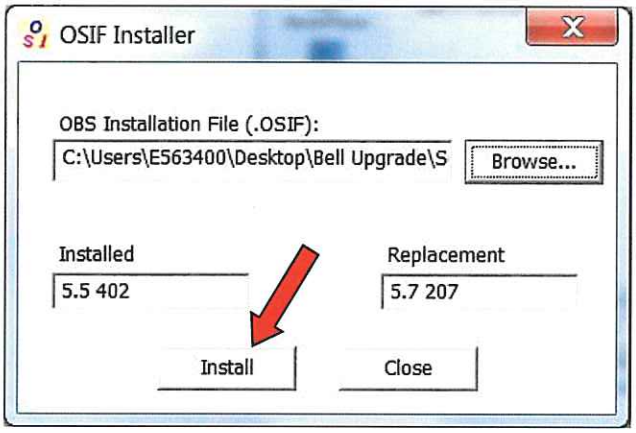
Note: If the 'osif' file is automatically selected by the tool, you can ignore this step.



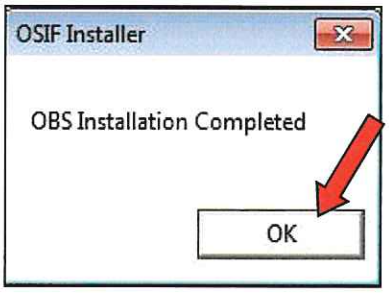
3) Select 'OBS_5_7_207.osif' and click 'Open'.



4) Click 'Install'.

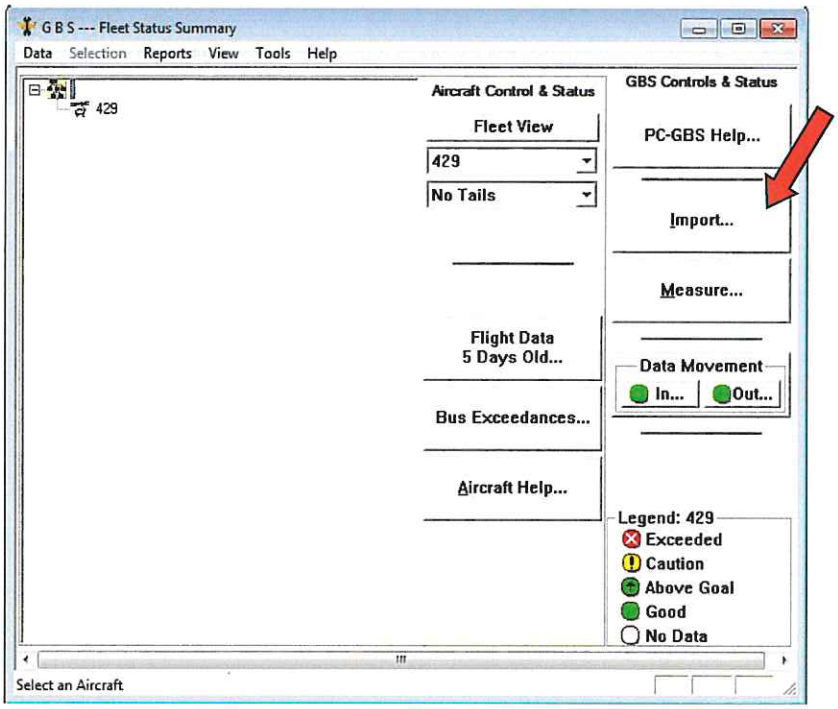


5) Click 'OK' then 'Close' all the way back to the main menu.

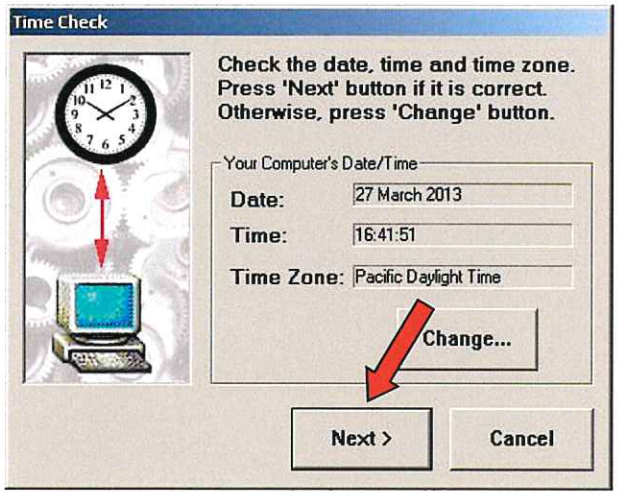


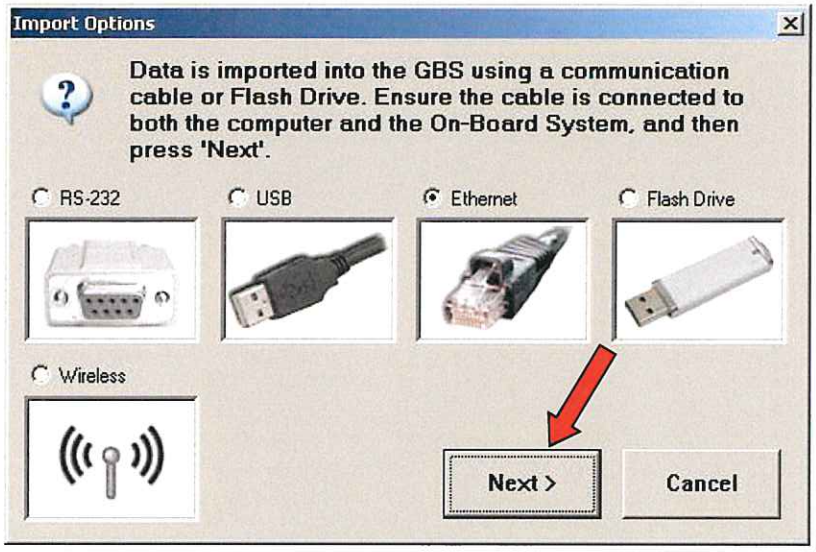
3.2.4 Verify the Current file version loaded on the HUMS 1134 before upgrading.

1) While connected to the HUMS 1134 via an Ethernet cable, open PC-GBS and Click 'Import'

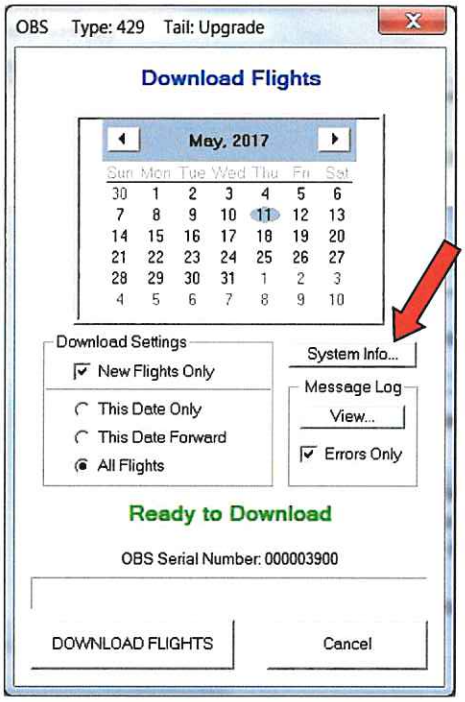


2) Connect to the HUMS 1134 via the Ethernet cable.

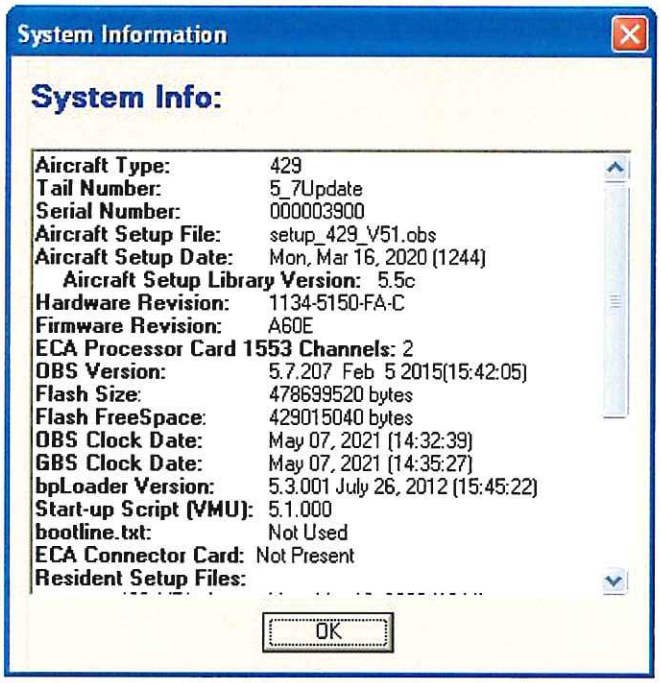




3) 'Download flights' dialog will appear. Click on 'System Info'.



4) Verify current software installed on the unit. The following screenshot is an example.

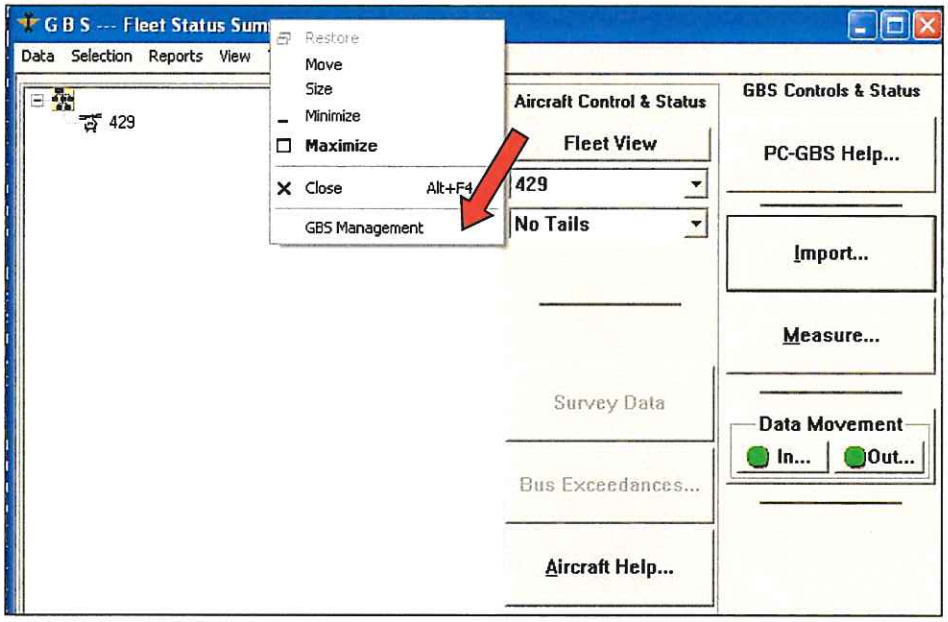


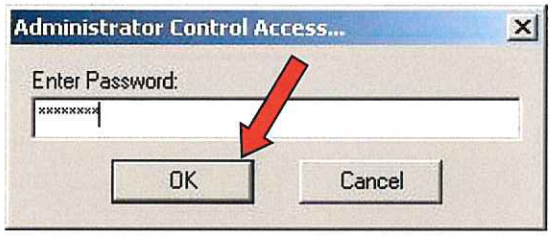
5) Click "OK" and then click on "Cancel" on the Download screen.

3.2.5 Connect via GBS Management to Update OBS/setup file

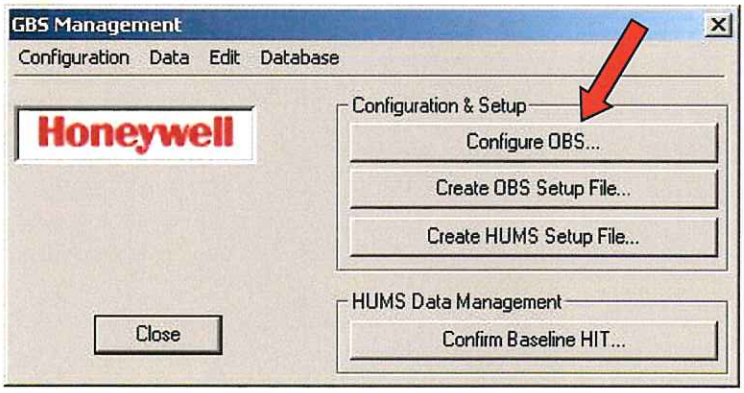
1) While connected to the HUMS 1134 with an Ethernet cable, right click on the menu bar, select GBS Management and enter the password as shown in the textbox and click 'OK'.

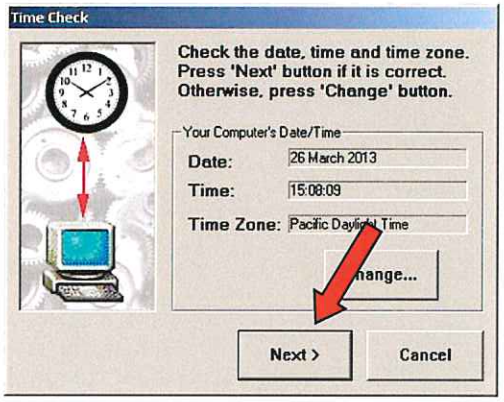
PASSWORD: **iac.vmep**

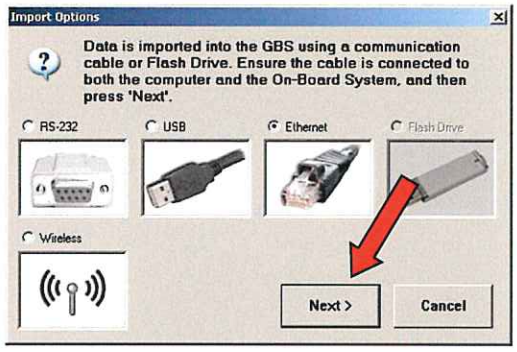


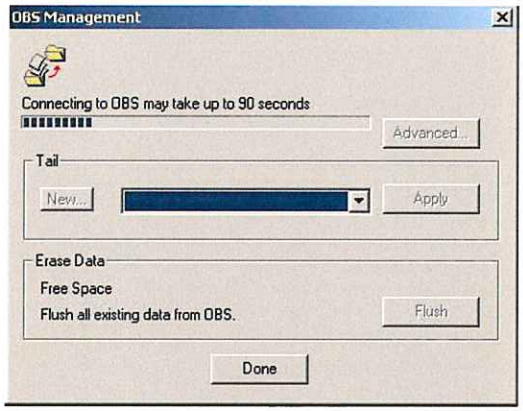


2) Click on 'Configure OBS…' and connect as shown.

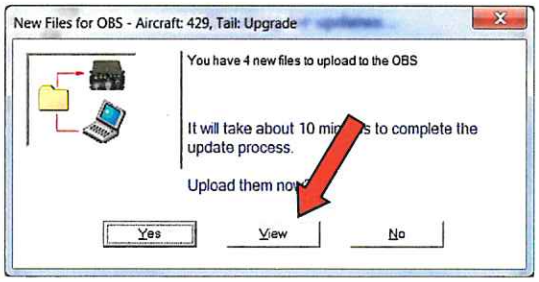




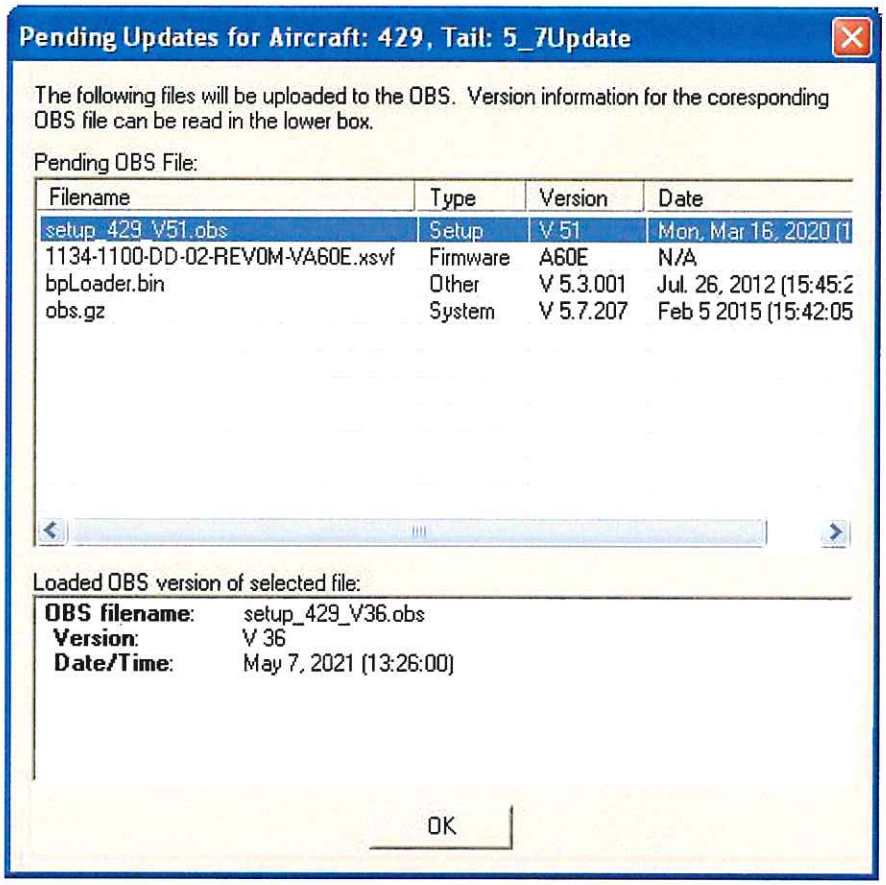




3) The following dialog offering upload of several files to the HUMS 1134 will pop up. Click 'View'.

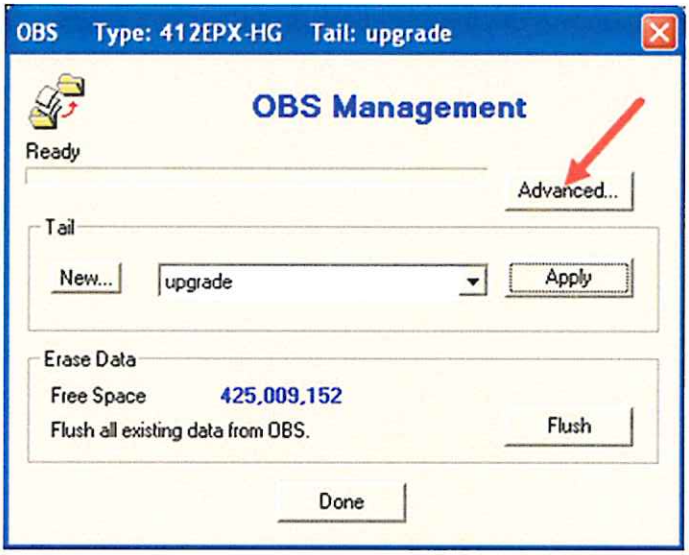


4) Confirm the files to be uploaded. The files can be a combination of a '.xsvf' firmware file, the 'obs.gz', and the setup file. The screenshot below is an example.

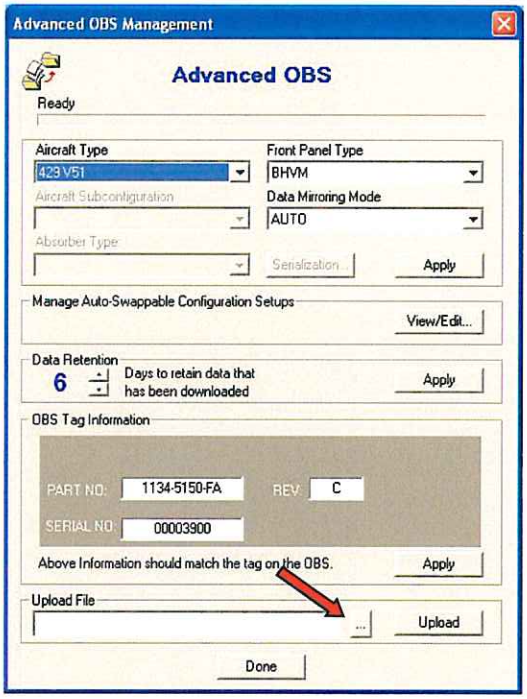


5) Upon verifying the files click 'Ok', and 'No' to upload the software onto the HUMS 1134.

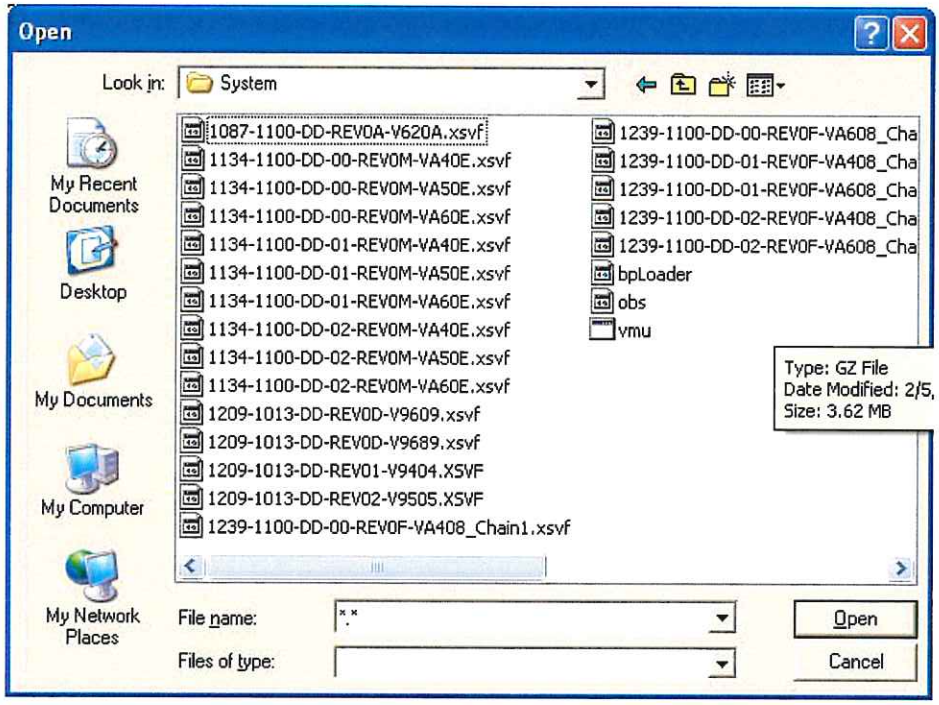
6) Once on the OBS Management page Click "Advanced".



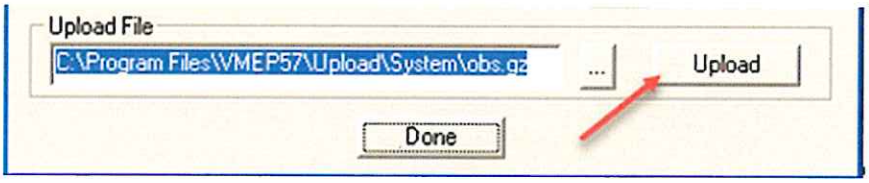
7) Select the '...' button in the "Upload File" to browse to the 'VMEP' folder.



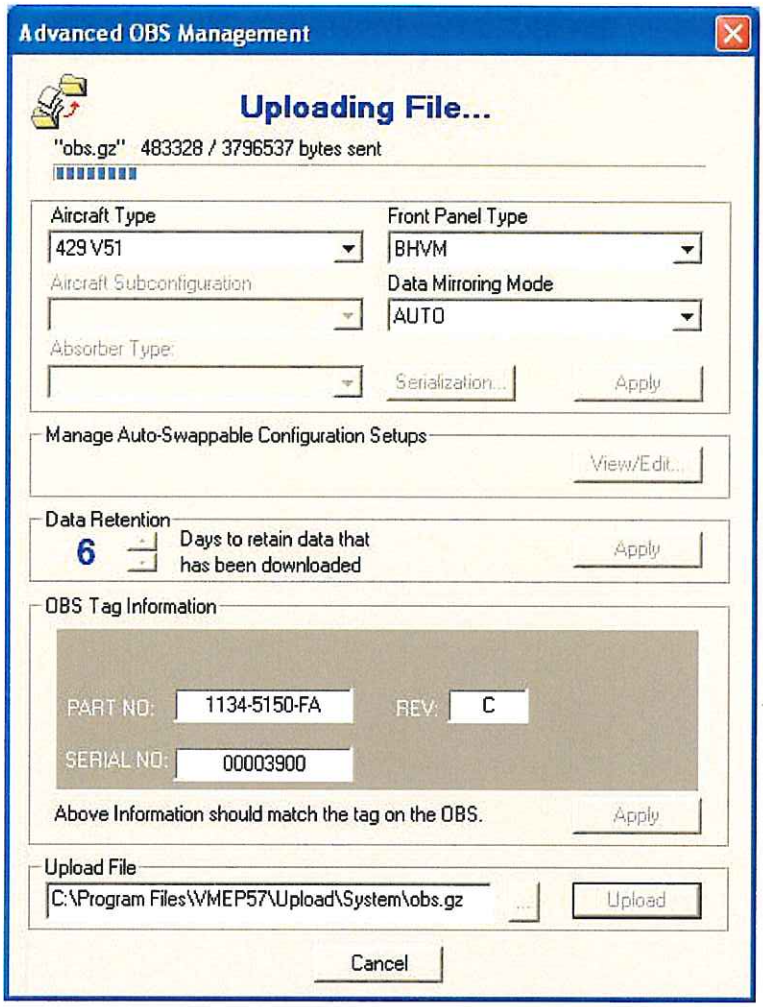
8) Select "OBS.gz" file from 'C:\Program Files (86)\VMEP\Upload\System' and click "Open"



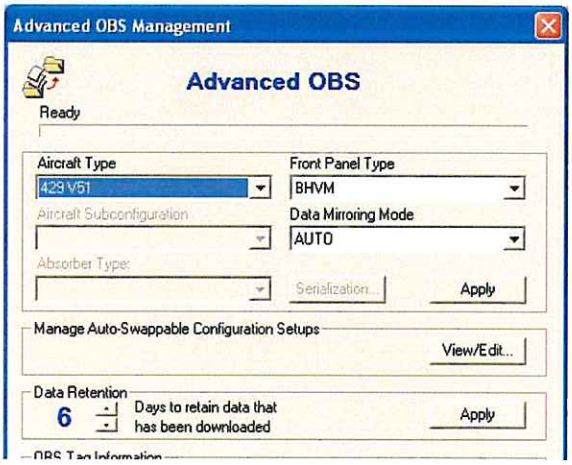
9) Then click 'Upload'.



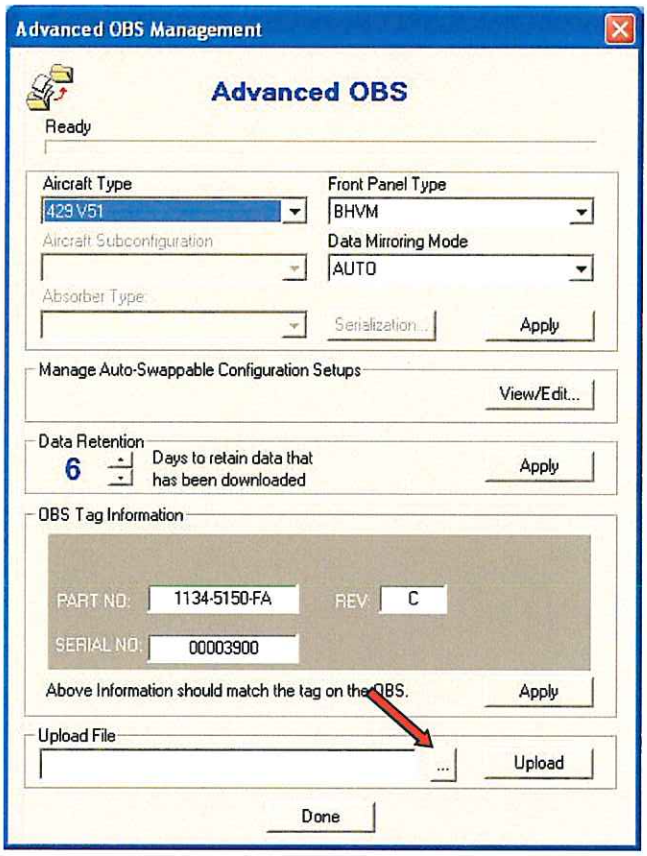
10) The file is uploaded as seen from the status 'Uploading File.'



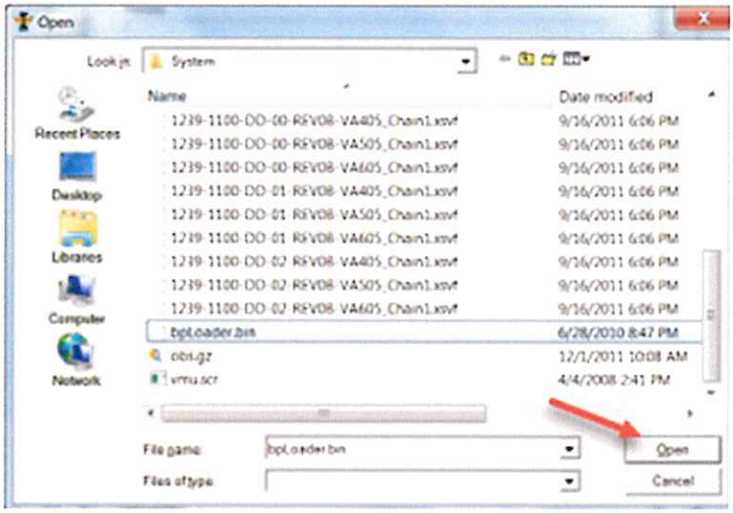
11) Wait for the upload. Once done, it returns to the Advanced OBS.



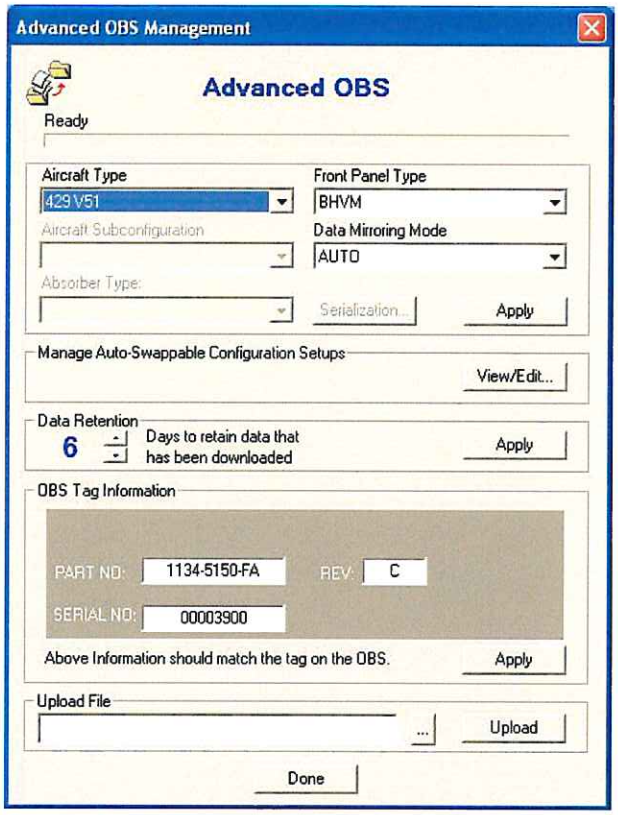
12) Select the '...' button in the "Upload File" to browse to the 'VMEP' folder.



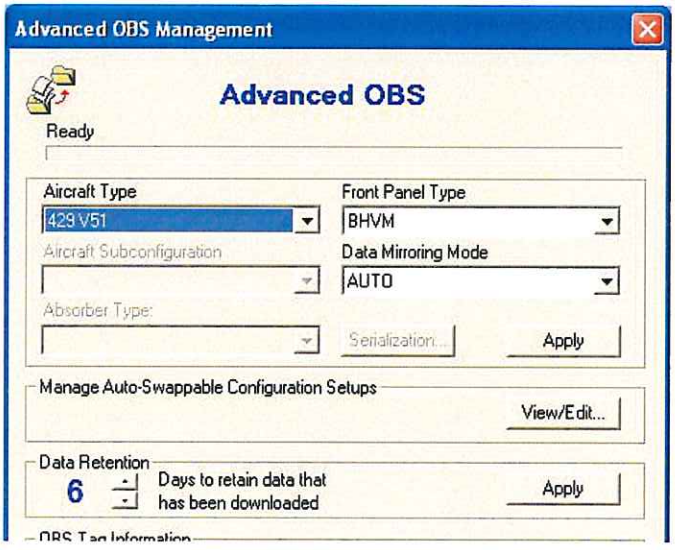
13) Select the appropriate 'bpLOADER.bin' file from "C:\Program Files (86)\VMEP\Upload\System" and click "Open"



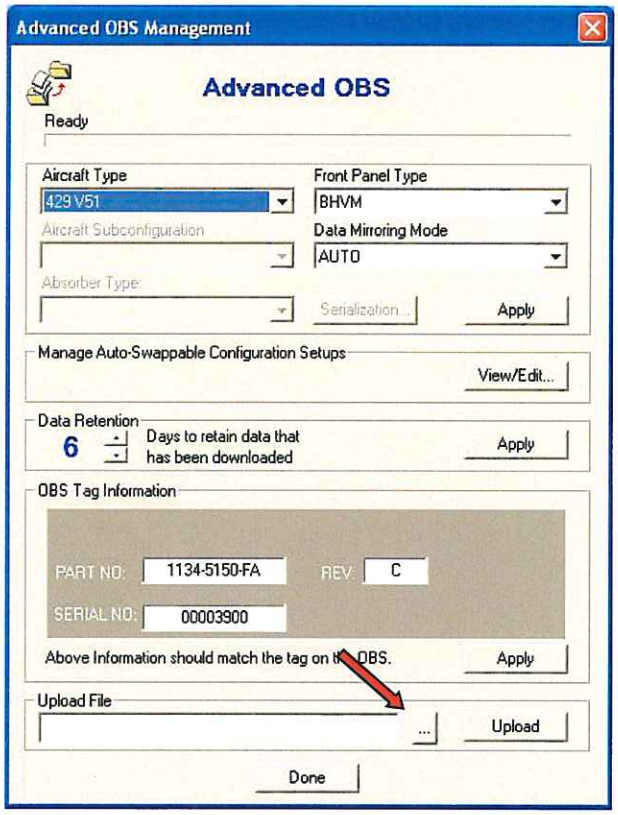
14) Click "Upload" and wait for the upload.



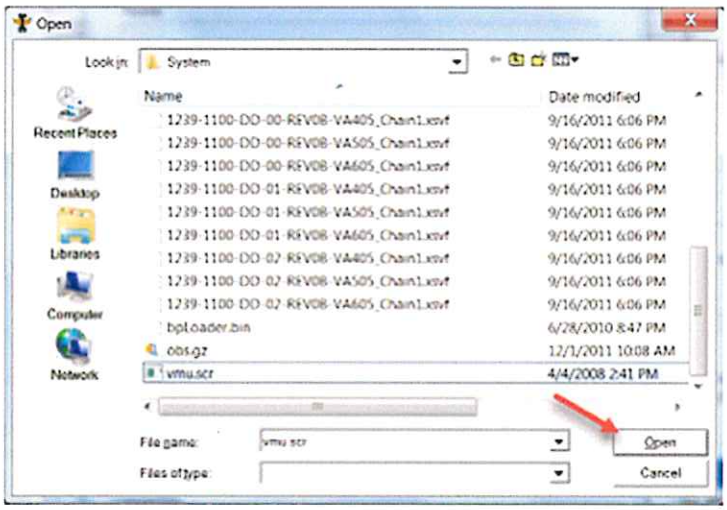
15) . Once done, it returns to the Advanced OBS



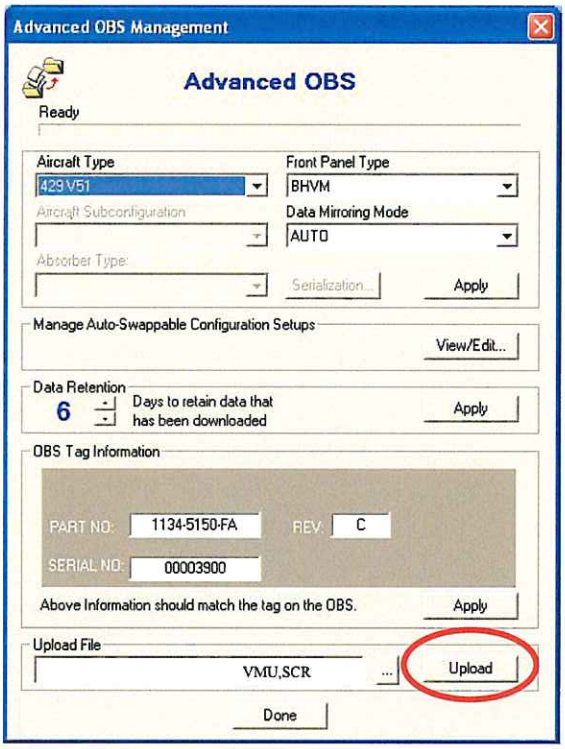
16) Select the '...' button in the "Upload File" to browse to the 'VMEP' folder.



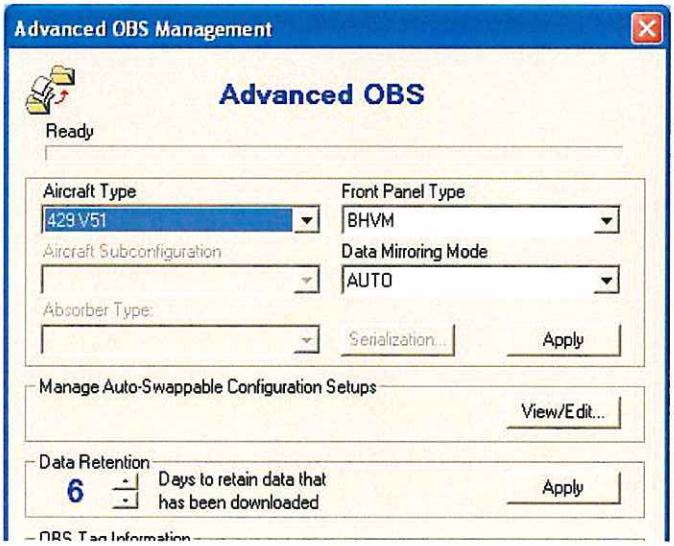
17) Select the appropriate 'vmu.scr' file from 'C:\Program Files (86)\VMEP\Upload\System' and click "Open"



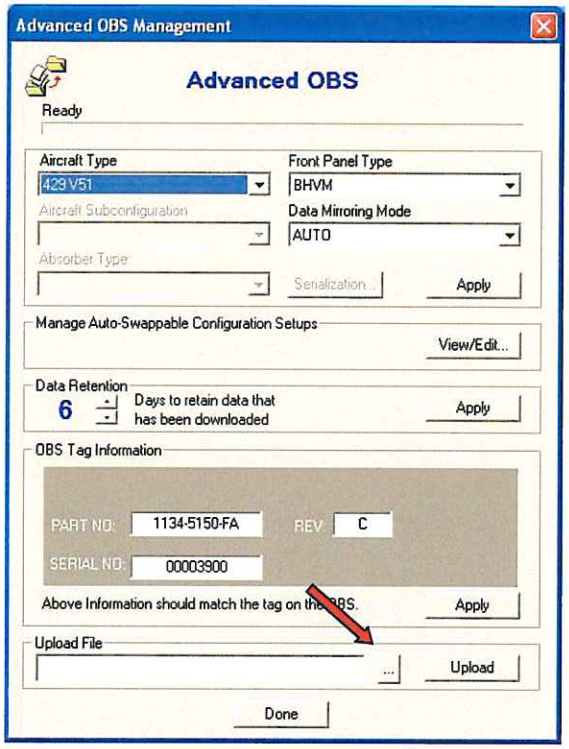
18) Click "Upload" and wait for the upload.



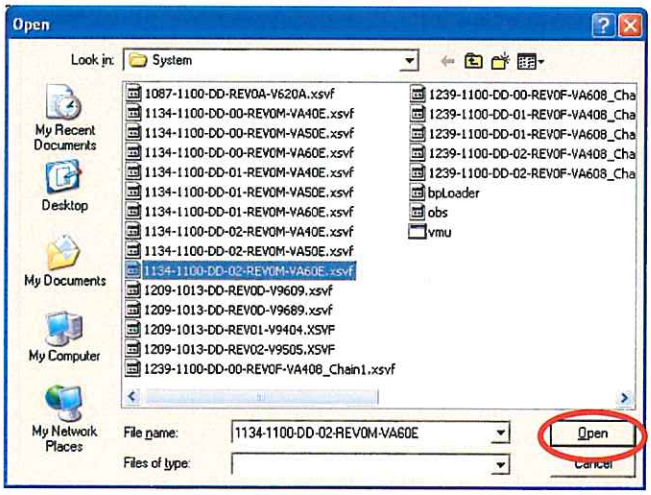
19) Once done, it returns to the Advanced OBS.



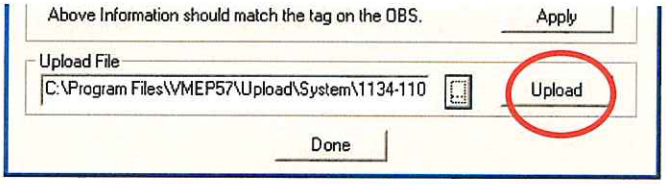
20) . Select the '...' button in the "Upload File" to browse to the 'VMEP' folder



21) Select the 1134-1100-DD-02-REV0M-VA60E.xsvf or 1134-1100-DD-00-REVM-VA60E from 'C:\Program Files (86)\VMEP\Upload\System' and click "Open"

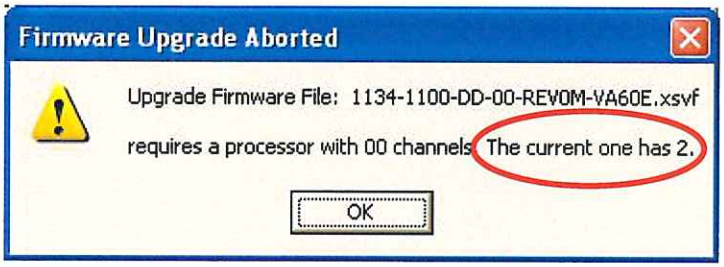


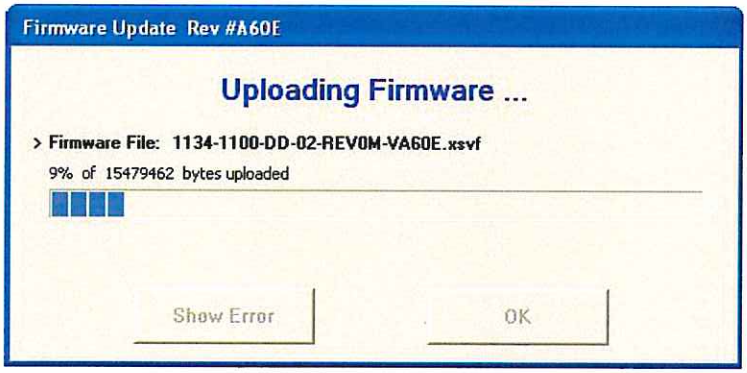
22) Click Upload



NOTE

The firmware is based on the hardware configuration. In most cases the firmware revision shall be 1134-1100-DD-02-REV0M-VA60E.xsvf. Occasionally it may display the error below, if this happens go back to step 19 and select the Version of firmware where the "02" number matches the "The Current one has "x" number in the statement below.

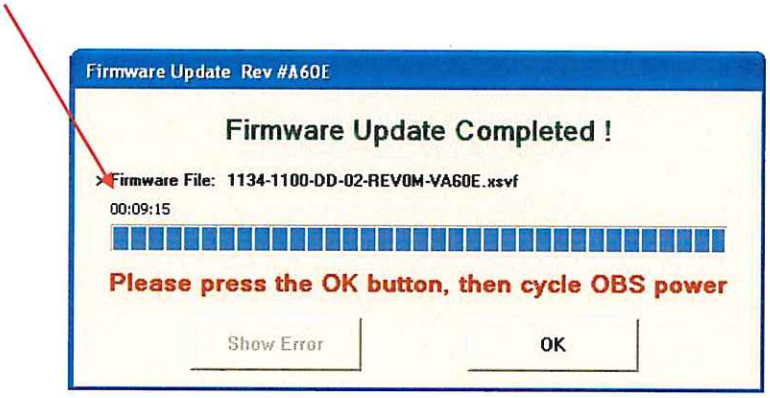




23) Once the firmware update is complete, click OK. The OBS will reboot automatically, but be sure to cycle power to the HUMS unit to ensure the firmware is installed.

NOTE

If the cycle timer exceeds 00:20:00 minutes, then cycle power on aircraft



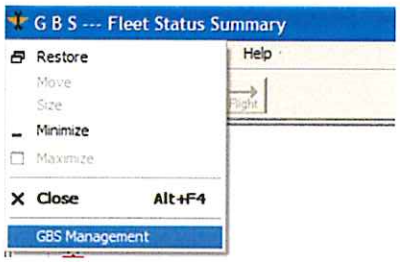
24) Changing the setup file (aircraft type) configuration on the unit.

25) Perform step 3.1.4 items 1 through 4 to add additional CSIF files on PC-GBS.

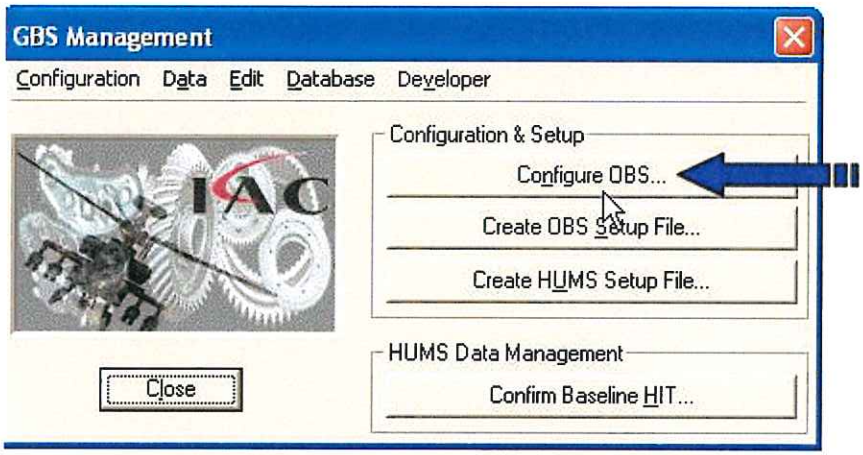
26) Connect the Ethernet cable between the Laptop with PC-GBS and to the 1134 processor with power to the processor and RDY light illuminated and connect as follows:

27) Start the GBS management menu by right clicking on the GBS icon at the top left portion of the GBS title bar.

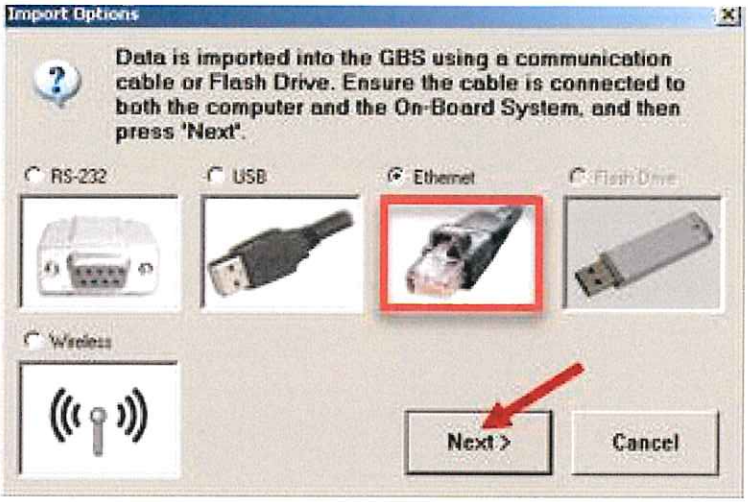
The password to enter the manager is "iac.vmep"



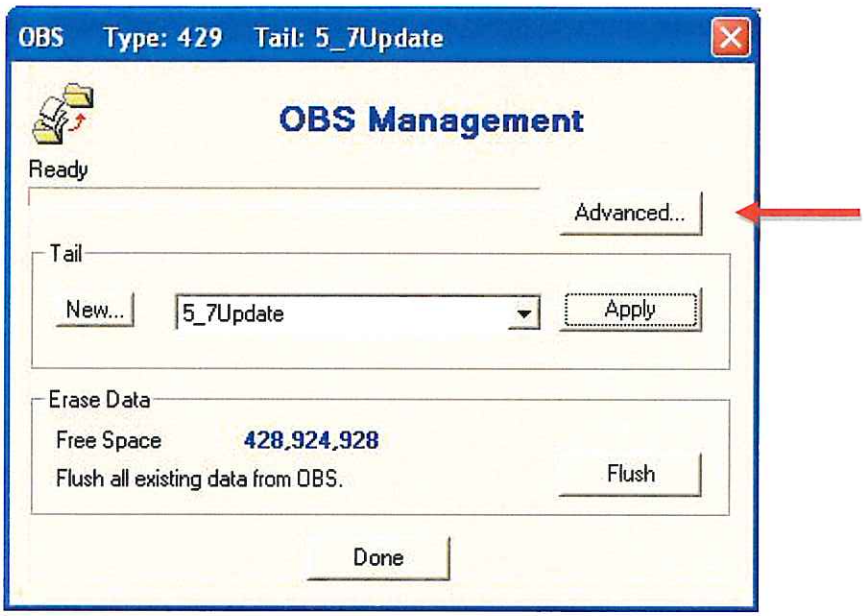
28) The GBS Management Menu will now launch.



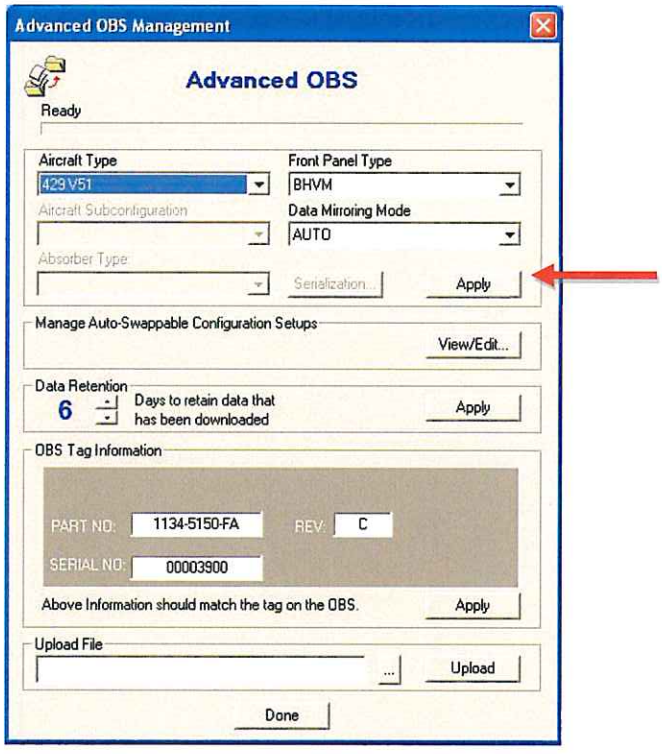
29) Select the "Configure OBS" button and you will be prompted to connect to the unit using Serial port, USB Port, or Ethernet Port. Select "Ethernet" and press "Next>" and then press "Next>" for the date and time dialog.



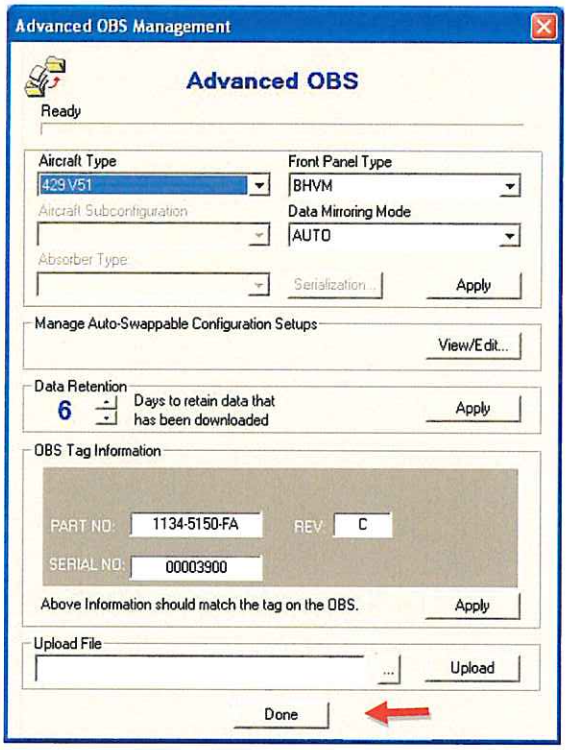
30) Once PC-GBS has connected to the unit, the OBS Management window will open. At this point, the OBS will pop up a window indictor you have one file to load. Click "NO" and continue to Advanced OBS.



31) Select the "Advanced…" button to enter the Advanced OBS Management window.



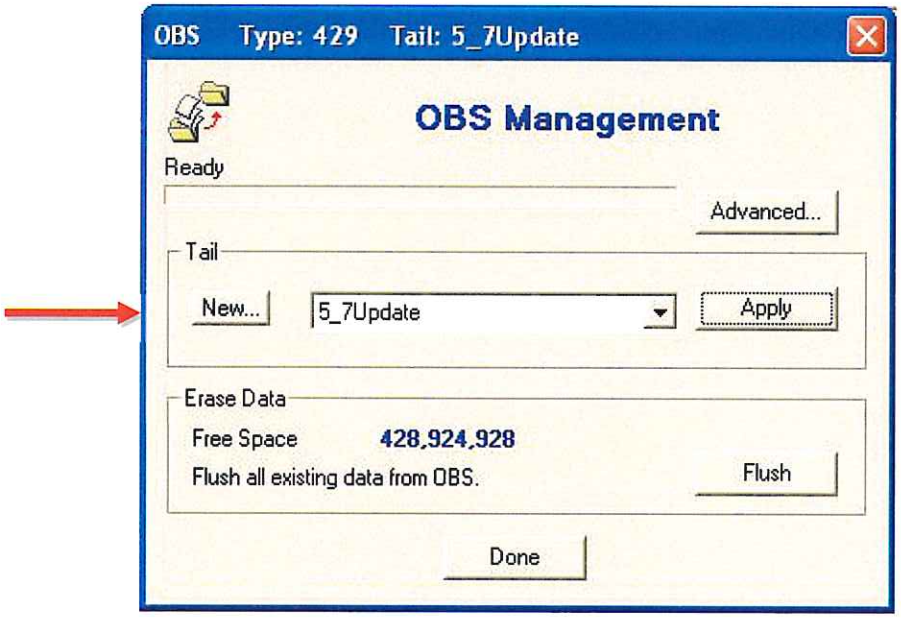
32) When the dialog reads "File Upload Completed," select the "Done" button at the bottom of the window, as shown below.



NOTE

If processor is already configured with the correct Tail number Skip steps 33, 34, and 35.

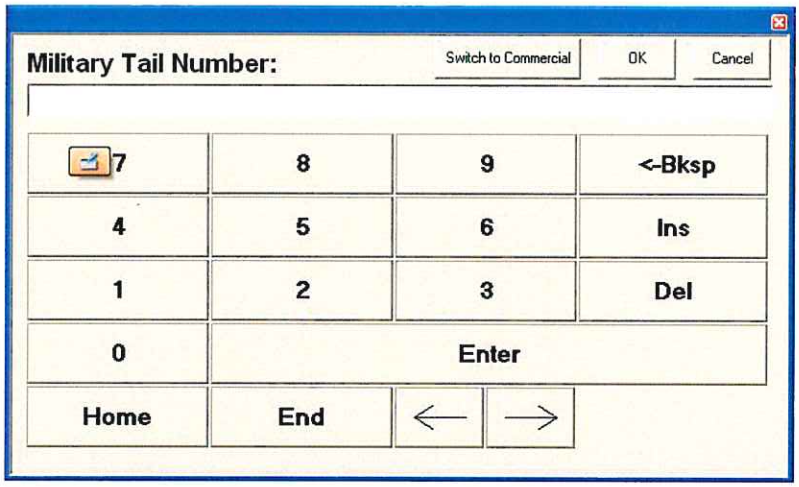
33) Selecting Done will take you back to the OBS Management window, then select the "New" button in the "Tail" section.



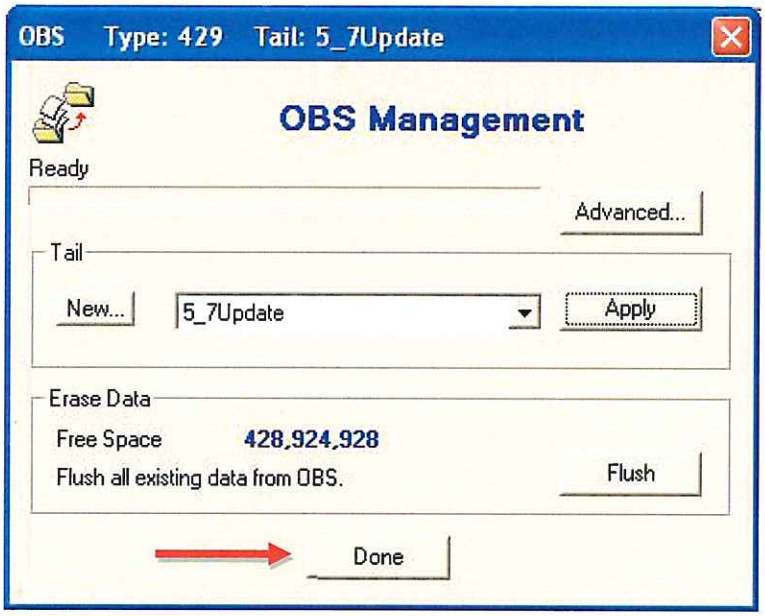
NOTE:

Bell requires that you use the aircraft serial number as the Tail number in lieu of the registration number. This will allow the data to be stored on the Bell MissionLink web site and tracked with the airframe over long term. Using the aircraft Serial number as the Tail number will keep the data tagged and current through the aircraft life.

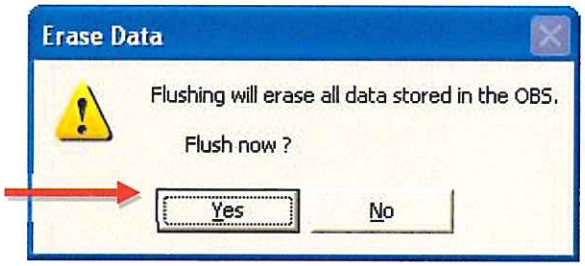
34) Select the "Commercial" button. Now type in the Serial number for the new aircraft and select "Apply."



35) Finally, select the "Done" button on the OBS Management window.

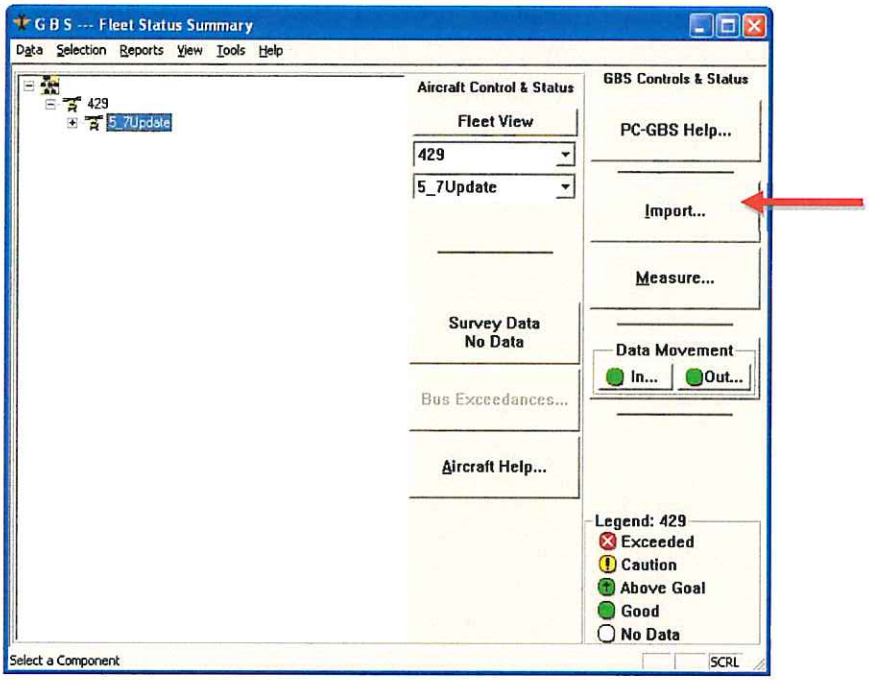


36) The system will ask to perform a system flush. Select Yes.

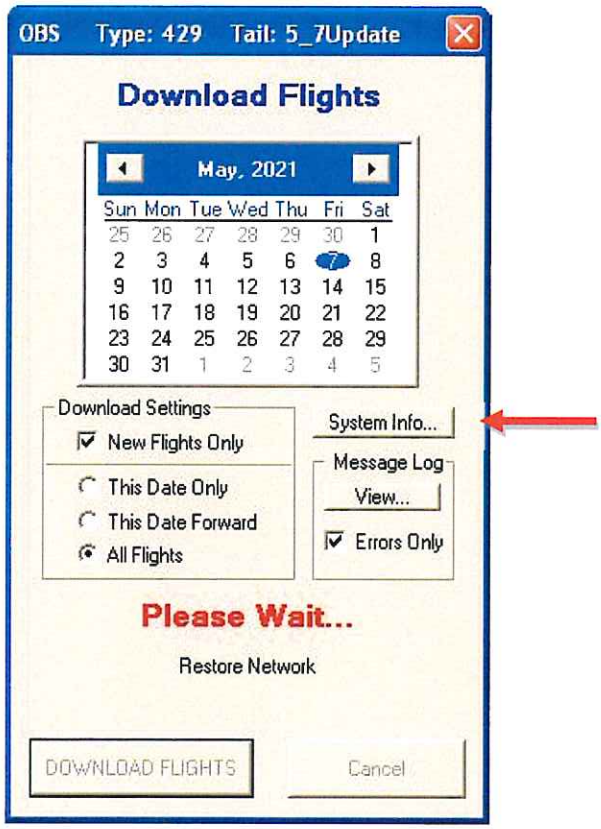


37) When the flushing has completed the 1134 will reboot.

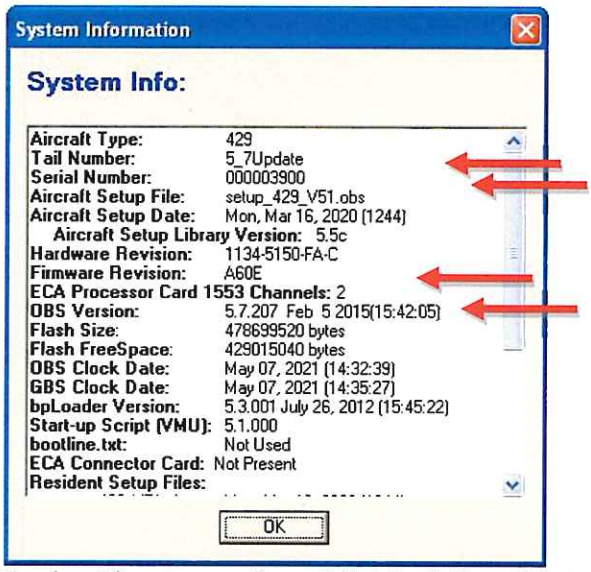
38) Once the system reboots, verify the system configuration by connecting with the Ethernet cable and performing an import.



39) Select "System Info" from the download dialog.

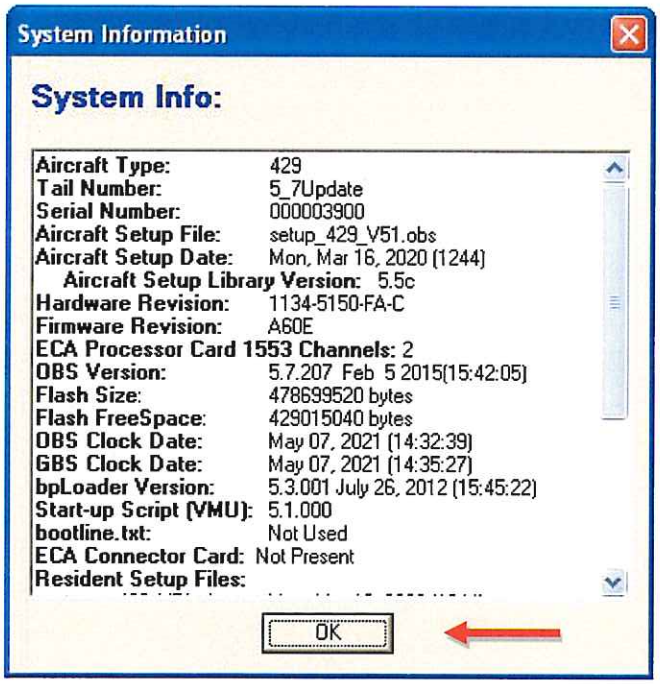


40) Ensure the proper aircraft type and tail number is installed.



41) Verify the correct "Tail Number," is set correctly, and that the "Aircraft Setup File," Firmware, and "OBS Version" are correctly set according to the table below:

42) After you have verified the correct software is on the system, select OK.



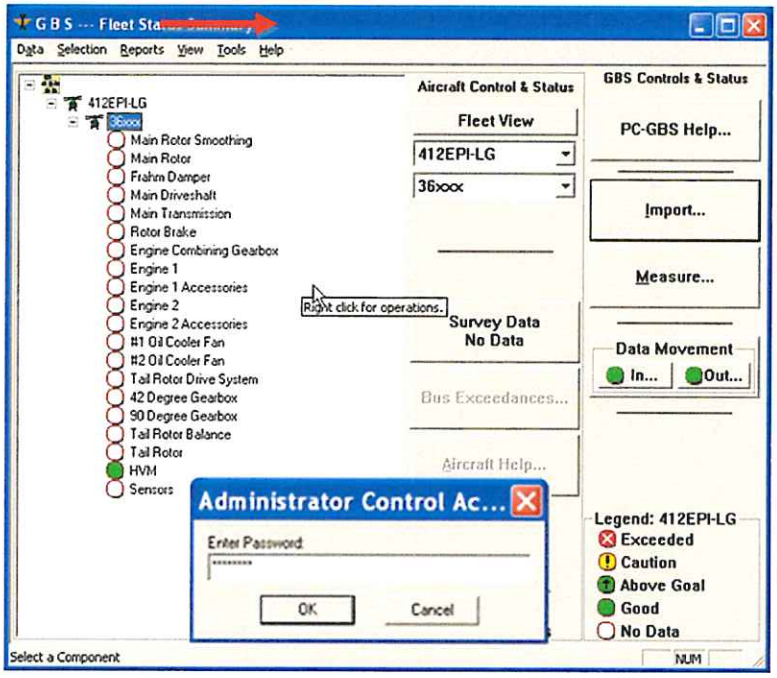
43) Press "Download Flights" button so that the latest BIT check can be downloaded

NOTE

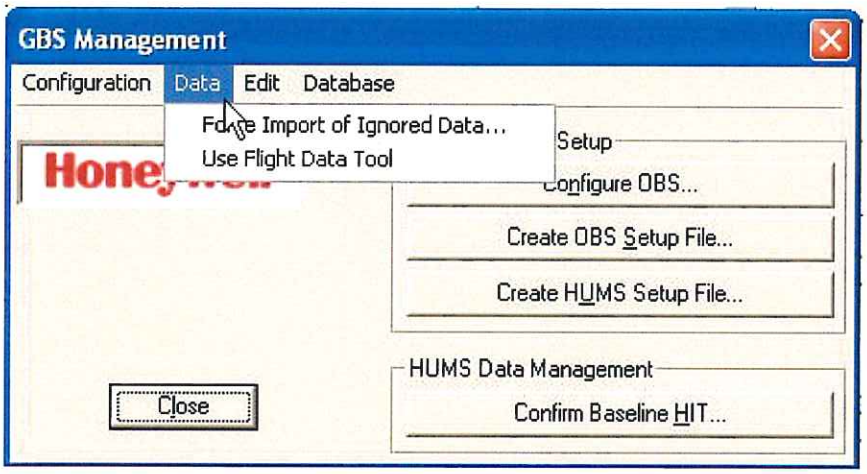
PC-GBS will not import any data that does not have an associated engine start detected or vibration acquisition was performed.

44) At the completion of the download you will be returned back to the PC-GBS main screen. In order to view the recent BIT status one more step must be accomplished in order to import a BIT when an engine has not been started or a vibration acquisition taken.

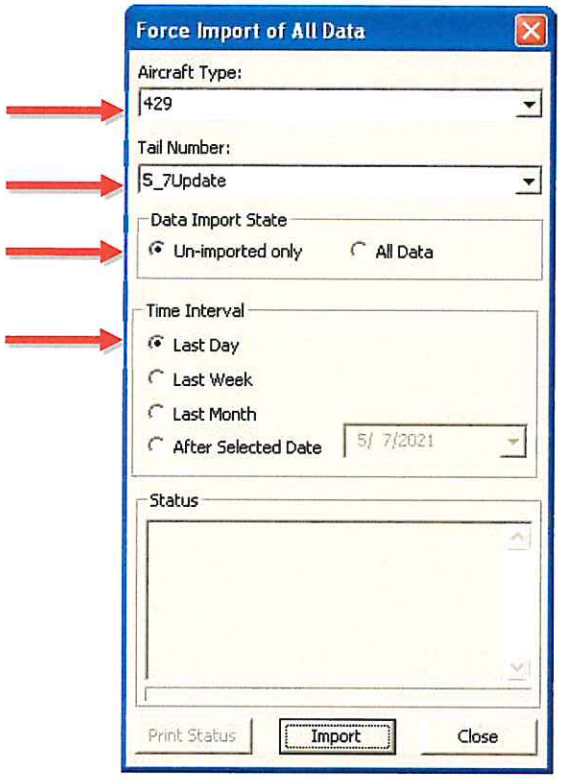
45) Right click on the widow title bar, select GBS Management, and enter password (iac.vmep).



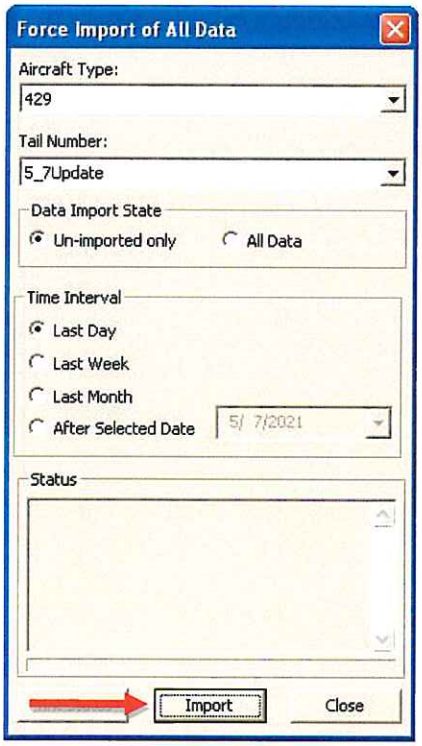
46) At the "Data" drop down, select "Force Import of Ignored Data…"



47) Now the "Force import of All Data" dialog will open. Ensure the proper aircraft type, tail number, Data Import State, and Time Interval are selected as indicated below.



48) Press the "Import" button and any new BIT checks will be imported into PC-GBS.



49) Press the "Close" button and return back to PC-GBS main screen ensuring the "HVM" icon is showing a green status.

50) Updating both PC-GBS and the onboard system is now complete.

4. Completing 1134 processor Identification Tag

NOTE

"This is an upgrade to an existing aircraft, replace the software configuration label with the new label p/n 1209-3196-PF or annotate as outlined in the applicable Bell Service Instruction. (Reference the figure below)."

1) Change or install 1209-3198-PF label to reflect the software versions of the software just previously installed and verified. Leave the "Config Ver:" line blank or strike through.

2) Write CSIF aircraft type and version onto 1209-3198-PF label.