

# **AMPLAN Reference Handbook**

## **AMPLAN Reference Handbook**

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# Table of Contents

<b>1. General</b> .....	<b>1</b>
1.1. First start of AMPLAN .....	1
1.2. Login to the system .....	1
1.3. AMPLAN philosophy .....	1
1.4. How to reach the modules .....	2
1.5. AMPLAN license .....	3
1.6. Contact information .....	3
<b>2. AMPLAN Modules</b> .....	<b>5</b>
2.1. Aircraft module .....	5
2.1.1. Tab: Aircraft basic data .....	5
2.1.2. Tab: OOPR assignment .....	6
2.1.3. Tab: Standard reports .....	6
2.2. Flight log module .....	7
2.2.1. Data entry .....	8
2.2.2. Searching, filtering for- or navigating to a particular date .....	9
2.3. Parts tracking module .....	9
2.3.1. Insert a new component into the database .....	10
2.3.2. Install a component into an aircraft or another component .....	12
2.3.3. Remove a component from an aircraft or another component .....	13
2.3.4. Modify component data manually .....	14
2.3.5. Viewing and printing the complete component history and changing action details .....	16
2.3.6. Assign maintenance requirements and review or print the component maintenance record ...	16
2.4. Scheduled Maintenance Program SMP module .....	17
2.4.1. Program section .....	18
2.4.2. Packages section .....	19
2.4.3. Tasks section .....	19
2.4.4. Assign SMP's to aircraft .....	20
2.5. Out of phase requirements 'OOPR' module .....	20
2.5.1. Searching and filtering OOPR's .....	21
2.5.2. Assign OOPR tasks to aircraft .....	21
2.6. Component maintenance requirements 'CMR' module .....	22
2.6.1. Searching and filtering CMR tasks .....	23
2.6.2. Assign CMR tasks to components .....	23
2.7. The AMPLAN maintenance planning module .....	24
2.7.1. Printing of planning module output .....	26
2.8. Maintenance event log module .....	26
2.8.1. Printing of maintenance records .....	27
<b>3. Additional / Optional modules and or functionality</b> .....	<b>29</b>
3.1. PIREPS - Pilots reports analysis .....	29
3.1.1. Enable PIREP analysis .....	29
3.2. Reliability analysis module .....	29
3.3. Optional modules .....	29

# List of Figures

1-1. Reconnect dialog .....	1
1-2. Login dialog .....	1
1-3. Modules overview .....	2
1-4. AMPLAN Toolbar .....	2
1-5. AMPLAN Menu.....	3
1-6. AMPLAN Modules Menu.....	3
2-1. Aircraft basic data .....	5
2-2. OOPR assignment .....	6
2-3. Standard reports.....	7
2-4. Flight log module .....	8
2-5. Parts tracking module.....	10
2-6. Insert a new component.....	11
2-7. Install a component .....	12
2-8. Component removal .....	14
2-9. Modify component data.....	15
2-10. View component history .....	16
2-11. Component maintenance requirements .....	17
2-12. Scheduled maintenance program.....	18
2-13. Out of phase requirements.....	20
2-14. OOPR assign dialog .....	22
2-15. Component maintenance requirements .....	23
2-16. Assign CMR tasks .....	24
2-17. Planning module.....	25
2-18. Maintenance event log.....	27

# List of Examples

2-1. More than one life limit parameter .....	11
2-2. Part installation consequences .....	13
2-4. Using wildcard characters for searching and filtering .....	21
2-5. Accumulating overdue .....	26

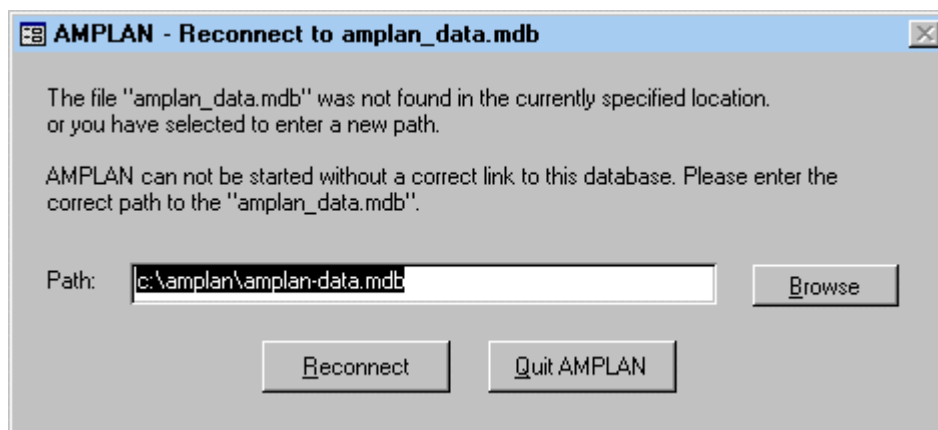


# Chapter 1. General

## 1.1. First start of AMPLAN

To start AMPLAN double-click the AMPLAN icon on your desktop or click the link in your "Start" menu. When AMPLAN starts up for the first time you will be asked to supply the current path to the "amplan\_data.mdb" which holds the data. To set the path click the browse button on the left side and navigate to the folder you installed AMPLAN. Select the "amplan-data.mdb" and click on "Open". This will set the path in the reconnect dialog of AMPLAN. Now click the reconnect button. (It might take some time to reconnect!)

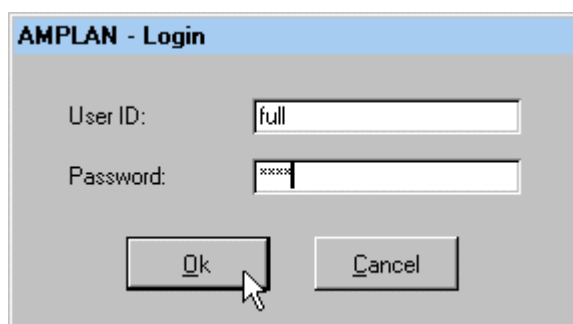
Figure 1-1. Reconnect dialog



## 1.2. Login to the system

In order to work with AMPLAN you must login to the system. If you do not have a User Id and password, please contact your AMPLAN administrator. For the DEMO version there are two predefined users, one has login ID "full" with password "full" and the second has login ID "read" with password "read". The user full has maximum access to all modules, and the user read only has read only access.

Figure 1-2. Login dialog



## 1.3. AMPLAN philosophy

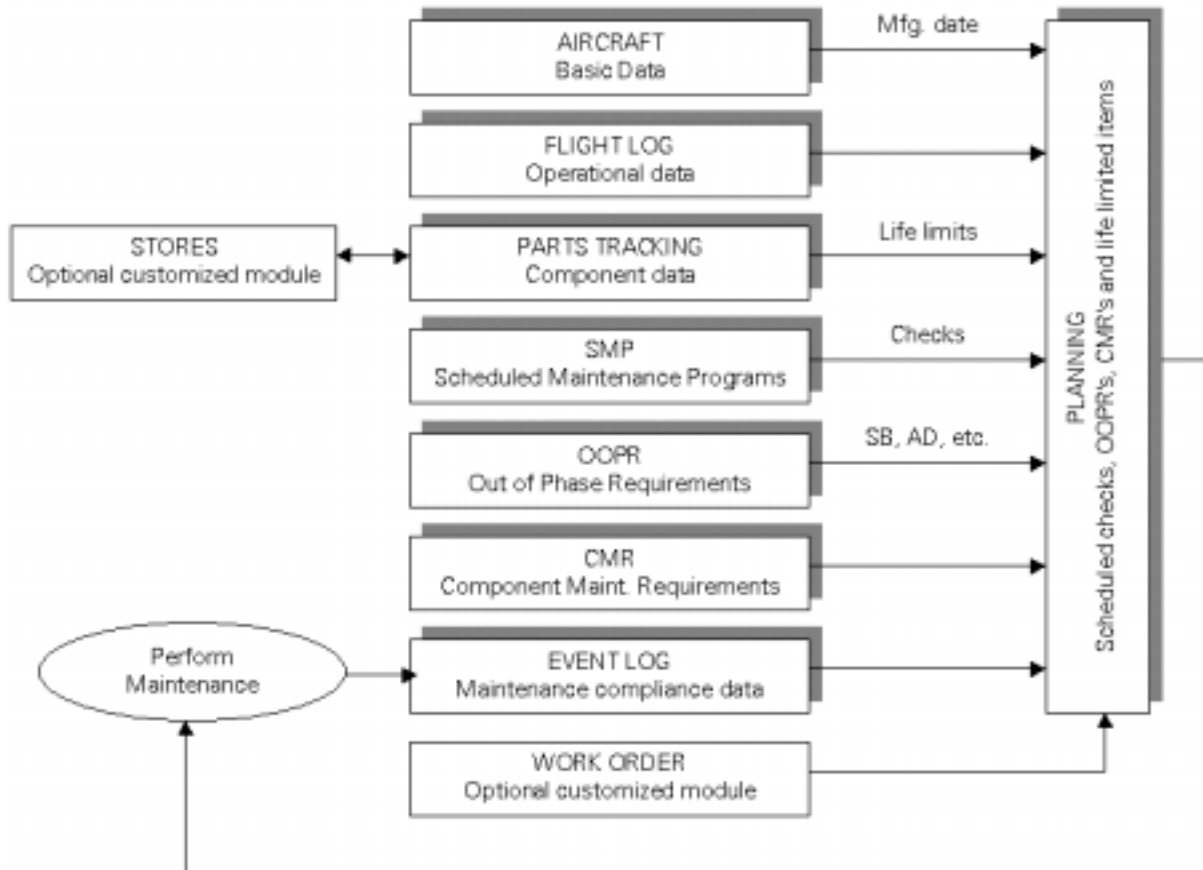
Maintenance planning and record keeping comprises the use of several data sources in real life, this scenario has been translated to the AMPLAN maintenance planning system in form of modules. Each of this modules holds a certain piece of information as you have it provided from either the aircraft OEM, the Authorities or the Vendors of installed equipment.

A graphical overview of the modules in AMPLAN looks like shown Figure 1-3. The modules can be reached via the AMPLAN toolbar, see Figure 1-4.

Maintenance requirements are stored as scheduled maintenance programs SMP's, out of phase requirements OOPR's and component maintenance requirements CMR's. These requirements can be assigned (linked) to aircraft or components. Life limits are stored with each component in the parts tracking module.

The planning module evaluates the maintenance requirements assigned to an aircraft and it's installed components and calculates the due date/time for each requirement taking the maintenance event log data into account. The output of the planning module can be printed in various formats and used for various purpose.

**Figure 1-3. Modules overview**



### 1.4. How to reach the modules

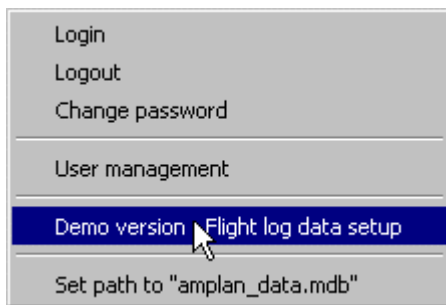
All of the AMPLAN modules can be reached via the AMPLAN toolbar on top of the application window.

**Figure 1-4. AMPLAN Toolbar**



The AMPLAN menu has following entries.



**Figure 1-5. AMPLAN Menu**

The AMPLAN Modules menu has following entries.

**Figure 1-6. AMPLAN Modules Menu**

## 1.5. AMPLAN license

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# Chapter 2. AMPLAN Modules

## 2.1. Aircraft module

The aircraft module is used to store the basic aircraft information in the database. Additional functionality is provided on the tab's "OOPR assignment" and "Standard Reports".

### 2.1.1. Tab: Aircraft basic data



The manufacturing date must be set because maintenance tasks based on calendar time can not be calculated if there is no date to start from. This would happen if such a task does not have a compliance record in the "Event log", see Section 2.8, module.

The model ID drop down box is going to be dynamically filled whenever you enter a model ID which is not already stored in the list.

The maintenance program drop down box is used to assign the scheduled maintenance program to be used for this aircraft. The scheduled maintenance programs you are able to select here are maintained in the "SMP Management", see Section 2.4, module. If there is no SMP defined in AMPLAN this box will be empty.

If a scheduled maintenance program is selected, and thereby assigned to the aircraft, all phase checks and tasks of this program will be evaluated in the "Planning", see Section 2.7, module for the compliance data maintained in the "Event log", see Section 2.8, module, and the next due for each phase check will be calculated.

Figure 2-1. Aircraft basic data

The screenshot shows a software window titled "AMPLAN - Aircraft". At the top, it says "Aircraft in database" and "Currently selected: D-DEMO". Below this are three tabs: "Aircraft basic data", "OOPR assignment", and "Standard Reports". The "Aircraft basic data" tab is selected and contains the following fields:

- Registration: D-DEMO
- Select or enter model ID: 737
- Aircraft serial number MSN: 1212
- Manufacturing Date: 22.01.1998
- Select a maintenance Program: Demo SMP 02

Below these fields is a "Notes" section with a text area containing: "This is a demonstration aircraft in the AMPLAN demo version. Use it to play around and test AMPLAN." At the bottom of the window are three buttons: "Save", "Delete", and "Exit". A mouse cursor is pointing at the "Exit" button. At the very bottom, there is a status bar that reads "Datensatz: 1 von 1".

### 2.1.2. Tab: OOPR assignment

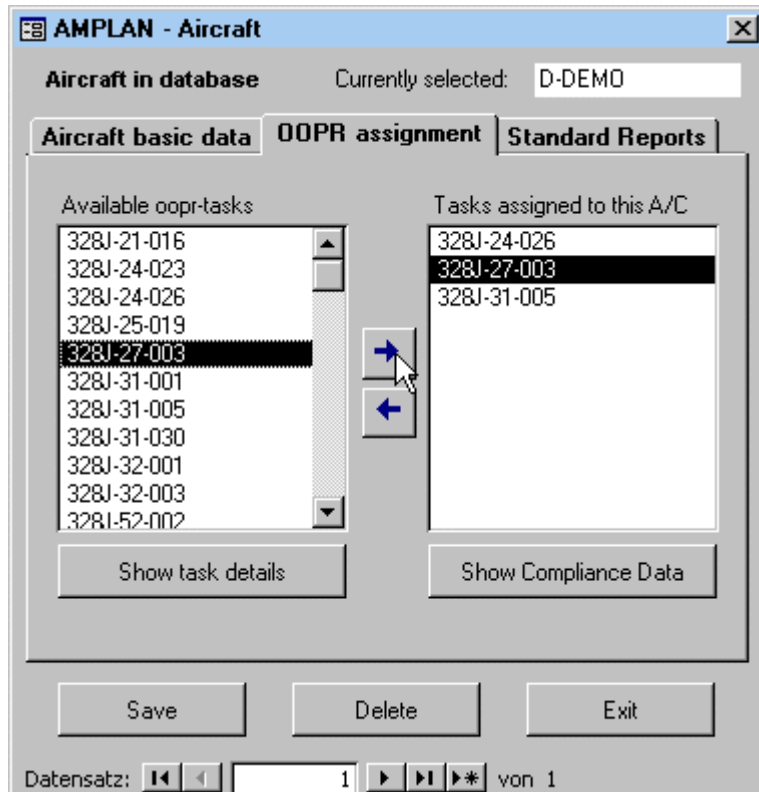
On this tab you can assign OOPR tasks which are maintained in the OOPR module, see Section 2.5.2, to the currently selected aircraft. Simply select the OOPR you want to assign in the left list, click the right arrow button, and you are done. The OOPR will now appear in the right list of already assigned OOPR tasks.

Likewise you can remove OOPR task assignments from the aircraft. Select the OOPR you want to remove from the aircraft in the right list and click the left arrow.



You may also assign and remove OOPR tasks from within the OOPR module, see Section 2.5.2.

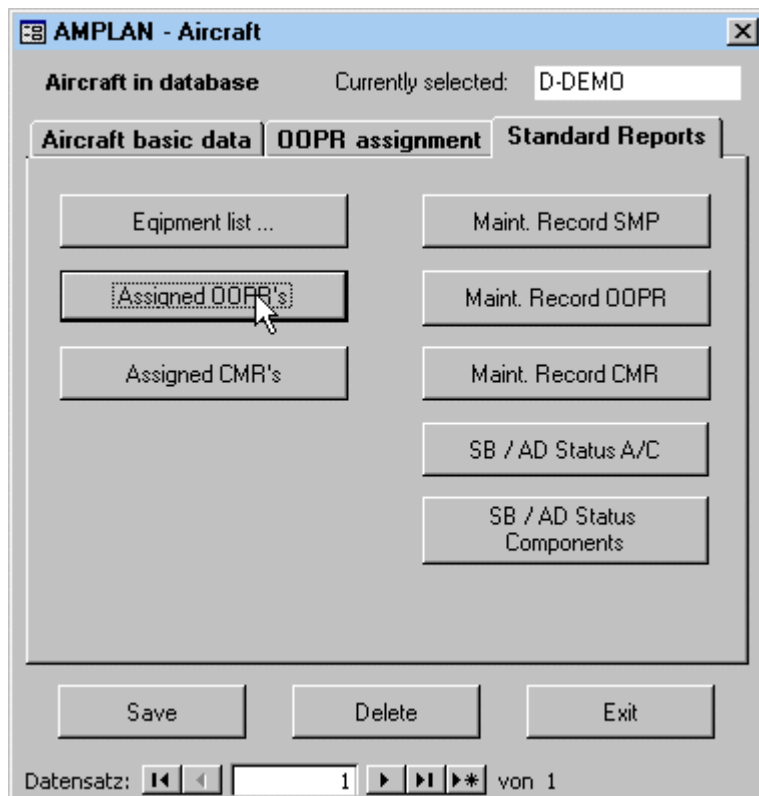
Figure 2-2. OOPR assignment



### 2.1.3. Tab: Standard reports

From here the equipment list, life limited item list etc. can be printed with a single mouse click.

Figure 2-3. Standard reports



## 2.2. Flight log module

The flight log module is designed to keep track of the aircraft hours with a minimum effort on data entry.



When you open the module or select another aircraft, the system automatically moves to the last record in the log.

Figure 2-4. Flight log module

Select an aircraft

Date

Flown Hours:  Cycles:  APU Hours:

Accumulated Hours:  Cycles:  APU Hours:

Flight Log data (Totals per page)

	Log Page	Hours	Minutes	Cycles	APU H.	APU M.
	121212	1	12	1	1	26
▶	1212	2	13	2	2	20
*		0	0	0	0	0

Datensatz:  von 2

Print Exit

Datensatz:  von 1826

- ❶ This area shows the totals as of the date indicated. The values here are calculated and therefore not editable.
- ❷ Navigate dates and create the next date here.
- ❸ This area shows the detail records per the selected day. Use this navigation buttons for the detail records.

### 2.2.1. Data entry

For you, the user, there are three different approaches on entering the flight time.

When you click on new record on the main form the system automatically adds the next date in the new record, and carries forward the TAT, TAC and APU total. All you have to do now is to enter so called "detail records" in the list below. Here you may enter:

- Only **one record per day**, which is the least effort. This is a good approach if the OPS data is maintained somewhere else, e.g. at Flight OPS.
- **One record per log page** used this day, this eliminates the carry forward errors frequently made in the physical books and is still not a big task.
- **One record per leg**, this is the maximum effort but eliminates errors on the sum per page as well as the carry forward errors.

After the new detail record is inserted the system shows the new daily total above the total time on the aircraft, which is updated also.

If you change an existing detail record, e.g. if you forgot a log page several days ago and insert it, all following records will be updated automatically to reflect these changes. The same applies if a value is changed or a detail record is deleted.

### 2.2.2. Searching, filtering for- or navigating to a particular date

The easiest way to jump to a particular day is to click on the "Date" field first and then use the search function which you invoke by clicking on the binoculars on the AMPLAN toolbar, see Figure 1-4. Enter the date you are looking for in the search box and click "search".

When you click in the date field, you may also use the AMPLAN toolbar to filter the records to show only a particular date you are interested in. Type the date in the "Filter by:" box and press return. Now only the record for the day you entered will be displayed. To switch the filter off, click on the funnel symbol besides the "Filter by" box.



As long as the filter is active, you can not alter the information displayed nor enter a record for a new day.

To manually navigate to the record you would like to see, use the navigation buttons or enter the record number directly into the "Record:" field at the bottom of the form.

## 2.3. Parts tracking module

The parts tracking module is used to track removal and installation of all serialized components in the fleet. Here you can create new components in the database, assign them component maintenance tasks and print component life records.

Figure 2-5. Parts tracking module

Select PN: 3160-121  
 Select SN: 435  
 Description: START GENERATOR

Hardware Mod./Index:   
 Software Mod./Index:   
 Mfg. or in service date: 22.01.1998  
 Limit hours: 0  
 Limit cycles: 0  
 Limit calendar time: 0  
 Under warranty until:   
 Covered by contract:   
 Last overhaul c/w at: 0 TSN 0 CSN

Buttons: Find Component, Install Component, Remove Component, Show Children, Modify comp. data, Delete Component

Component maintenance requirements

Last action stored in component history

Date: 15.11.1999 Action: install

In/from aircraft: D-DEMO  
 Location: AFT

In/from component: APU DRY  
 PN: GTCP36-150(DD)  
 SN: P-169

Times of component, next higher assy and aircraft at action date

Component	Next higher assy	Aircraft
TSN 2843	TSN 3802	TAT
CSN 3305	CSN 2970	TAC
		APU
Limit is reached at	TSN	TAT
	CSN	TAC
		APU

Buttons: Complete History..., Action details..., <- Go to NHA, Insert a New Component, Equipment list ..., Exit

❶ The SN box contains only the SN's belonging to the above selected PN.

❷ Use these buttons to jump between child and parent components.

In the basic version of AMPLAN you can do only three types of action with a component:

- **INSTALL**, install the component in an aircraft or into another component.
- **REMOVE**, remove the component from the aircraft or component it is installed in.
- **UPDATE**, update the component data manually.

When you install or remove a component which has sub-components installed, all the sub-components together with their attached maintenance requirements will be installed or removed as well.

### 2.3.1. Insert a new component into the database

Click the "Insert new component" button and this dialog will appear.



Figure 2-6. Insert a new component

**AMPLAN Parts tracking - Insert new component**

Partnumber **1** 8160-121

Serialnumber

Description START GENERATOR

Hardware Mod./Index

Software Mod./Index

In service or mfg. date

Check if component is life limited

Limit hours 0

Limit cycles 0

Limit calendar time 0

**Component times and condition** Other details

Component time at date

Time since new 0

Cycles since new 0

Serviceable

Last overhaul at TSN 0

Last overhaul at CSN 0

Under warranty until

Covered by contract

Insert Cancel

- ❶ After you select or enter a PN here, and if this PN does already exist in the system, the description and possibly life limits will be filled automatically with the values from the already stored component.

The field "Component time at date" must be filled. The In service or manufacturing date is a must if component tasks, CMR's, based on calendar time will be linked to the component.

You may set all three possible life limit parameters at the same time, the system will evaluate them for whatever is due first in the planning module.

#### Example 2-1. More than one life limit parameter

When you put in 5000 Hours, 4000 Cycles and 3 Years, then you read it like this:  
The limit is reached at either 5000 FH or 4000 landings or 3 Years whatever comes first depending on the utilization of the aircraft.

The last overhaul at TSN/CSN fields should be filled if you want to see the TSO and CSO in the equipment listings. They default to 0 if no overhaul has been carried out yet.

After the data is filled in, click "Insert" and the component is put into the database. The only history record for this component at this point will be an "Update" action with the data you just supplied. The next step is to install it into an aircraft or into another component.

### 2.3.2. Install a component into an aircraft or another component

By clicking "Install Component" on the parts tracking form, the following dialog will appear.

Figure 2-7. Install a component

- ❶ If you want the component TSN to be calculated based on APU operating hours instead of aircraft hours, check this box. If one of the parent components has this set, the TSN calculation for all its child components is automatically based on APU operating time. Therefore this feature is not required for installation into other components.

After you have entered the install date, you have the choice to install directly into an aircraft or into another component which is stored in the database already.

- ☞ The component you are installing into may itself be a child of another component. This allows to build assemblies in tree like structures of components where, when e.g. the top level component is installed or removed from an aircraft, all childs are also being installed or removed.

Next step is to enter the appropriate ATA chapter and then select either the aircraft you want to install into or the component you want to install into.

The hour and cycle information of the aircraft and/or NHA for the date of installation will be calculated automatically and put in to the respective fields.

On the tab "Installation details" you can enter workorder-, certificate references and a note in case you want to.

Click on "Install" and the component is installed with it's complete previous history, correctly calculated TSN/CSN and all of it's assigned maintenance tasks.

#### **Example 2-2. Part installation consequences**

If the installed component is life limited, installed into another component and this parent component into an aircraft, then the component will appear in the planning module with it's assigned maintenance tasks and the life limit, whereby the due date/time is shown in aircraft TAT and TAC.

The install action makes an entry in the component history. You can check or even modify certain fields of this record by clicking the "Complete history ..." button on the main form.

#### **2.3.3. Remove a component from an aircraft or another component**

To remove a currently installed component click "Remove Component" on the parts tracking form. The following dialog will appear.

Figure 2-8. Component removal

**AMPLAN Parts tracking - Remove Component**

**Remove component**

Description: START GENERATOR  
 PN: 8160-121  
 SN: 435

**Installation data**

Date: 22.01.1998  
 TSN: 0  
 CSN: 0

Aircraft: D-DEMO NHA PN  
 Location: PART OF RH ENGINE NHA SN  
 AC TAT: 0 NHA TSN  
 AC TAC: 0 NHA CSN  
 AC APU: 0 Use APU

**Removal data** **Removal details**

Date: 19.03.1999

Comp. TSN: 1810 NHA TSN AC TAT: 1810  
 Comp. CSN: 2105 NHA CSN AC TAC: 2105  
 AC APU: 2694

Component condition at removal

unserviceable  Component failure  
 serviceable

Component removal was

unscheduled  
 scheduled

Remove Cancel

All you need to do here is to enter the removal date, since all the required data to calculate the TSN/CSN at removal is stored in the database already.

You may fill the rest of the fields as required and click on remove. This will add a "Remove" action to the component history with the details you have set here, but which you may alter any time later on.

#### 2.3.4. Modify component data manually

You may alter component data anytime if you need to, e.g. because a life limit has been put on or has been removed, PN or SN was not entered properly in the system etc.. Click on "Modify comp. Data" and the following dialog will appear.

Figure 2-9. Modify component data

AMPLAN Parts tracking - Modify component data

Partnumber: 8160-121

Serialnumber: 435

Description: START GENERATOR

Hardware Mod./Index: [ ]

Software Mod./Index: [ ]

In service or mfg. date: 22.01.1998

Last DVH at TSN: 0

Last DVH at CSN: 0

Check if component is life limited

Limit hours: 0

Limit cycles: 0

Limit calendar time: 0 [ ]

Under warranty until: [ ]

Covered by contract: [ ]

**CAUTION:**  
If you change one or more of the blue fields below, the component state, and the state of all its first level subcomponents, will be set to NOT INSTALLED. In this case you must do the install procedure for these components again.

Component time at date: [ ]

Time since new: 0

Cycles since new: 0

Remark: [ ]

[ Update ] [ Cancel ]

❶ Click here to apply a PN change to all components which have the same previous PN as well.

❷ Apply changes to all components in the database having the same PN.



Changing anything but the blue fields does not lead to a new history record.



Changing the component time manually makes is necessary to remove the component in case it is installed. First level child components will be removed also in this case.

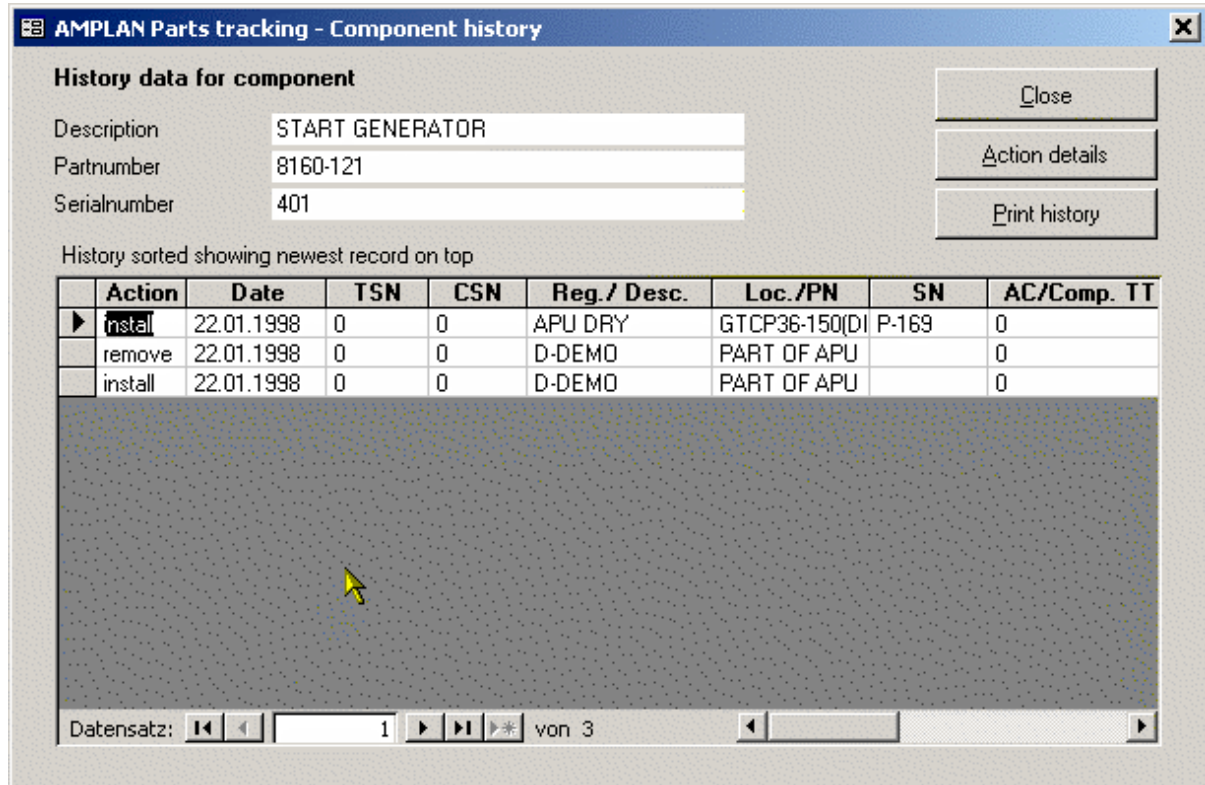
This is because child level component TSN/CSN is dependent on the parent time at installation. If the parent time is changed manually, there is no way to make sure the calculated parent TSN/CSN stored in the history record is still valid. For the component itself it is the same, there is no way to ensure the calculated history data is still valid.

### 2.3.5. Viewing and printing the complete component history and changing action details

Sometimes you may need to modify an action in the component history. E.g. a removal action if a component was removed to troubleshooting and the initial entry for the condition was "unscheduled" and "unserviceable". A few days later you may know for sure the component was not the reason for the trouble on the aircraft and you want to change the condition to "serviceable".

To do this, click on "Complete history" and the following dialog appears.

Figure 2-10. View component history



In the list move to the record you are interested in and click "Action Details". You will then see different dialogs in respect to the type of action where you can view and modify the detail data.

To print the history simply click "Print history".

### 2.3.6. Assign maintenance requirements and review or print the component maintenance record

On the tab "Component maintenance requirements" of the parts tracking form you can assign CMR's analog to the out of phase tasks, OOPR's, in the aircraft module, see Section 2.1, to the currently selected component.

Figure 2-11. Component maintenance requirements

The screenshot displays the 'AMPLAN Parts tracking' window. At the top, there are input fields for 'Select PN' (8160-121), 'Select SN' (241), and 'Description' (START GENERATOR). Below these are fields for 'Hardware Mod./Index', 'Software Mod./Index', 'Mfg. or in service date' (22.01.1998), 'Limit hours' (0), 'Limit cycles' (0), 'Limit calendar time' (0), 'Under warranty until', 'Covered by contract', and 'Last overhaul c/w at' (0 TSN 0 CSN). On the right side, there are buttons for 'Find Component', 'Install Component', 'Remove Component', 'Show Children', 'Modify comp. data', and 'Delete Component'. Below the input fields, there are two tabs: 'Install-, Remove-, Update- history' and 'Component maintenance requirements'. The 'Component maintenance requirements' tab is active, showing two lists: 'Available CMR's' and 'Assigned CMR's'. The 'Available CMR's' list includes items like '328-24-30-00-05', '328J-26-21-00-02', '328J-LTA-1999-017', '328J-P&W A25071', 'SMP 24-21-00-01', 'SMP 24-30-00-01', 'SMP 24-30-00-02' (highlighted), 'SMP 24-30-00-03', 'SMP 24-30-00-05', 'SMP 24-30-00-06', 'SMP 26-21-00-02', and 'SMP 26-24-00-03-01'. The 'Assigned CMR's' list includes 'SMP 24-30-00-01', 'SMP 24-30-00-02' (highlighted), and 'SMP 24-30-00-03'. Between the lists are right and left arrow buttons. To the right of the 'Assigned CMR's' list are buttons for 'Print assigned CMR list' and 'Print CMR compliance record'. At the bottom of the window, there are buttons for 'Insert a New Component', 'Equipment list ...', and 'Exit'.

You assign CMR tasks which are maintained in the CMR module to the currently selected component simply by selecting the CMR you want to assign in the left list, click the right arrow button, and you are done. The CMR will now appear in the right list of already assigned CMR tasks. To remove a CMR click the left arrow button.



You may also assign CMR task from within the CMR module, see Section 2.6.

To print the maintenance record for the component, click "Print CMR ...".

## 2.4. Scheduled Maintenance Program SMP module

Within the SMP module the scheduled maintenance programs are maintained. You can set up as many programs as you want or require. Each of these programs contains any number of phase checks or packages like A1, A2, C1 and so forth. Each of these packages in turn, can contain any number of tasks.

Figure 2-12. Scheduled maintenance program

- ❶ Maintenance Programs
- ❷ Packages (phase checks) belonging to the currently selected maintenance program. (Ref. No. 1)
- ❸ Tasks belonging to the currently selected package. (Ref. No. 2)

When you move to a different program in the top section of the form, only packages belonging to this program will be shown in the package section. When you move from one package to another, then only the tasks belonging to this program and package are displayed.

### 2.4.1. Program section

Each SMP is identified by its name, so it makes sense to give them useful names like "737-800" which allows you associate the name with a meaning. Each SMP has a revision status, this is the AMPLAN internal revision state. You should make a printout or copy of the SMP for future reference before you are going to amend it and



increase the revision. The revision date refers to the internal revision as well. The root document field is meant to store the source document ID which is the base for the AMPLAN SMP.

### 2.4.2. Packages section

The packages section contains the phase checks with their intervals. You may enter thresholds and repeat intervals based on airframe hours, airframe cycles, calendar time and APU operating hours. The planning module calculates the due date/time accordingly. If there is no maintenance event log record for a package the "Threshold ..." values are used for the calculation. Otherwise the "Repeat ..." interval is used. You may fill in all fields, the system will evaluate the due date/time on the basis "whatever comes first".



Setting up a SMP up to here (only a program and some packages) is already enough to do planning since the intervals are given, but if you do not add tasks to the package you can not print a sign sheet from within the planning module.



If you check the box "Do not show this package on planning output" (not visible on the above figure), this package will not be used for actual maintenance planning purpose. This may be useful if you want to maintain all tasks supplied by the OEM in the database, but disable planning for packages which are not applicable to the aircraft the SMP is assigned to.

### 2.4.3. Tasks section

The tasks section finally contains all the tasks with details belonging to the selected program and the selected package.



*One important thing here to watch out for is:*

A typical aircraft manufacturer maintenance planning document contains a lot of tasks which are more related to rotatable type components rather than the aircraft itself. E.g. a brush check for a starter generator, such a task is better tracked as a component maintenance requirement CMR, see Section 2.6.

#### **Example 2-3. Decide if a maintenance requirement is a SMP or a CMR task**

Assume the a.m. brush check has an interval of 600 FH, a new unit was installed at 200 FH TAT so it would be due at 800 FH TAT. The package still will be due at 600 FH TAT if this task is tracked in the SMP for the aircraft, this means you lose 200 hours on the generator.

If you make this task a CMR (you can use the "Copy task" button for this) and assign it to the generator, the task will be tracked using the actual component time TSN/CSN instead of the aircraft time. The planning output in AMPLAN will show this task to be due at 800 FH TAT now.

This mechanism does work also when you remove the component let's say at 400 FH TAT from aircraft A and install it into aircraft B which has 5000 FH TAT already. The planning output for aircraft B will now show this task to be due at 5200 FH TAT.



**When defining tasks, always make your mind up whether it is aircraft related or component related!**

When you make a SMP task a CMR task in AMPLAN, it's up to you whether you keep the task in the SMP and put in the field "AMPLAN Note" something like "Task tracked with CMR: 24-31-00...", which will appear on the sign sheet, or if you delete the SMP task.

We recommend to keep it since your local authorities might want to see the reference from the manufacturer supplied MPD to the AMPLAN CMR task.

### 2.4.4. Assign SMP's to aircraft

To assign a SMP to an aircraft, open the aircraft module, see Section 2.1, and select the SMP to be used in the drop down box on the "Aircraft basic data" tab.

## 2.5. Out of phase requirements 'OOPR' module

In the OOPR module all tasks which do not fit into any of the SMP packages, but which are aircraft related, are maintained. Additional to this, aircraft related AD's and SB's are kept here. The format of an OOPR task is almost similar to a SMP task.

Figure 2-13. Out of phase requirements

The screenshot shows the 'AMPLAN - Out of phase requirements' window. The form contains the following fields and values:

- Task ID: 328J-21-016
- Task type: SB
- Root document: 328J-21-016
- Title: AIR CONDITIONING
- Description: Water dripping in the cabin
- Zones: (empty)
- Access: (empty)
- Reference: (empty)
- Effectivity: (empty)
- Skill level: (empty)
- Men: 1
- Category: R
- Hours: 4
- Source: (empty)
- Manhours: 4.0
- Effective as of: (empty) **1**
- Threshold Date: 20.06.2000
- Threshold FH: 0
- Threshold LDG: 0
- Threshold CAL: 0 MONTH
- Threshold APU: 0
- Repeat FH: 0
- Repeat LDG: 0
- Repeat CAL: 0 MONTH
- Repeat APU: 0

Buttons at the bottom: Print OOPR's, Assign to aircraft ..., Save, Delete, Exit.

Status bar: Datensatz: 1 von 18

- ① The purpose of the "Effective as of" field is the following, if e.g. a SB has a compliance of "Within the next 400 FH", then there must be a date set which is used to find the aircraft time at this date (of all aircraft having this task assigned) as *starting point for the 400 FH*.

Each task is identified by a unique "Task ID". I suggest to use a consistent naming scheme because this allows for easy filtering and searching of OOPR tasks.

The correct setting of the "Task type" is important for accurate SB/AD status report generation in the aircraft module, see Section 2.1.

### 2.5.1. Searching and filtering OOPR's

An easy way to find a certain task is to put the cursor in the task id field and click on the binoculars on the AMPLAN toolbar, see Figure 1-4. In the search dialog specify what you are looking for and click "search". Close the dialog if you have found what you are looking for.

You can also filter a whole range of tasks having e.g. "737" somewhere in the task id. To do so move the cursor to the task id field, type "\*737\*" (without quotes) into the "Filter by" box on the AMPLAN toolbar, see Figure 1-4, and press return. Now you will see all tasks having "737" somewhere in the task id, but not any other task. To remove this filter, click on the funnel beside the "Filter by" box.

#### Example 2-4. Using wildcard characters for searching and filtering

As explained above, you may use wildcard characters for filters. The most common ones are:

```
*      stands for any number of characters.
?      stands for a single character.
#      stands for a single number.
```

Examples:

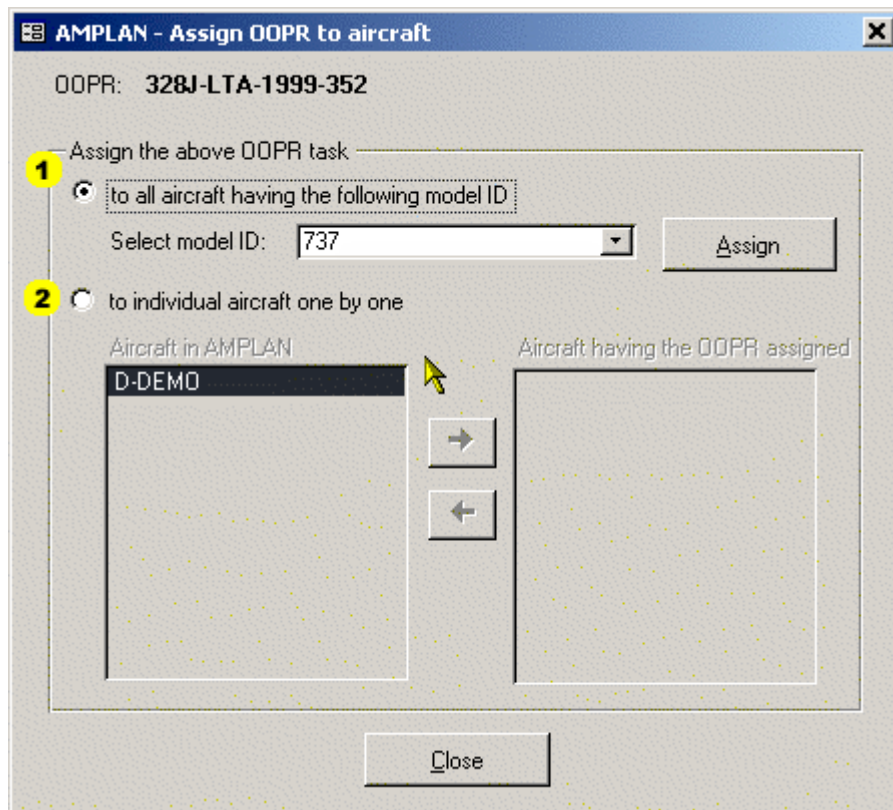
```
123*   will return all task id's starting with 123.
123*-1 will return all task id's starting with 123 and ending with -1.
123??-1 will return all task id's starting with 123, having any two
        characters after that and ending with -1.
123##-1 will return all task id's starting with 123, having any two num-
        bers after that and ending with -1.
```

### 2.5.2. Assign OOPR tasks to aircraft

Assigned OOPR tasks will appear in due list for the aircraft having the task assigned, in the AMPLAN planning module, see Section 2.7.

To assign a task, navigate to the task you want to assign and click on "Assign to aircraft". The following dialog will appear.

Figure 2-14. OOPR assign dialog



- ❶ Tasks will not be assigned twice to an aircraft. You may click "Assign" as often as you want. This is true even if the OOPR is already assigned to some of the aircraft in the database.
- ❷ Assigning tasks individually is analog to the assignment in the aircraft module, see Section 2.1.2. The only difference is, here the OOPR task is given and you select from a list of aircraft, instead of having the aircraft given and selecting from a list of OOPR tasks.

## 2.6. Component maintenance requirements 'CMR' module

In the CMR module all component related tasks are maintained. This includes component AD's, SB's and tasks like "generator brush check" or "fire extinguisher weight checks".

Figure 2-15. Component maintenance requirements

The screenshot shows a dialog box titled "AMPLAN - Component maint. requirements". The fields are as follows:

- Task ID: SMP 24-30-00-01
- Task type: OTHER
- Root document: DEMO SMP 02
- Title: DC GENERATOR
- Description: Replace (off-aircraft) the generator brushes
- Zones: 420
- Access: 422-AL;422-CR
- Reference: AMM 24-31-01-020-000-AA0 AMM 24-31-01-420-000-AA0
- Effectivity: (empty)
- Skill level: (empty)
- Men: 1
- Category: DS
- Hours: 0,6
- Source: (empty)
- Manhours: 0,6
- Effective as of: (empty)
- Threshold Date: (empty)
- Threshold FH: 0
- Threshold LDG: 0
- Threshold CAL: 0 MONTH
- Repeat FH: 600
- Repeat LDG: 0
- Repeat CAL: 0 MONTH

Buttons at the bottom: Print CMR's, Assign to component PN ..., Save, Delete, Exit.

Status bar: Datensatz: 7 von 20

The layout and functionality is similar to the OOPR module, see Section 2.5.

Each task is identified by a unique "Task ID". I suggest to use a consistent naming scheme because this allows for easy filtering and searching of CMR tasks.

The correct setting of the "Task type" is important for accurate SB/AD status report generation in the aircraft module.

The purpose of the "Effective as of" field is the following, e.g. if a SB has a compliance of "Within the next 400 FH", then there must be a date set which is used to find the component time at this date as *starting point for the 400 FH*.

### 2.6.1. Searching and filtering CMR tasks

This is identical to the way this is done with OOPR tasks. Please refer to Section 2.5.1 and Example 2-4.

### 2.6.2. Assign CMR tasks to components

When a component with an assigned CMR task is installed into an aircraft, the CMR task will appear in the AMPLAN planning module for this aircraft. When the component is removed and installed somewhere else, the assigned task will follow the component and appear in the aircraft it is installed then.

To assign a CMR task to a component, navigate to the task you want to assign and click on "Assign to component PN". The following dialog will appear.

Figure 2-16. Assign CMR tasks

AMPLAN - Assign CMR to component pn

CMR: **SMP 24-30-00-01**

Assign the above CMR task

to all components with the following partnumber

Select partnumber: 001A561A0000201

to a particular component

Select partnumber: 04-1504-1429

Select serialnumber: 8804

to individual SN's of components where at least one SN has the task assigned

PN's where at least one SN has the task assigned

8160-121	START GENERATOR
----------	-----------------

SN's for above PN's

241
401
435

SN's having the task assigned

241
401
435

Functionality here is the same as in the OOPR module, see Section 2.5.2.

## 2.7. The AMPLAN maintenance planning module

The planning module is the heart of the system. In the planning module all the data stored and maintained in the various modules is being evaluated and due date/time for each SMP package, OOPR task, CMR task and life limit of installed components is being calculated for each aircraft in the database.

Figure 2-17. Planning module

Select aircraft: **D-DEMO**

Date: 07.02.2002  Use log data when date is changed

TAT (hours): 6351

TAC (ldg's): 7385

APU (op. hrs.): 9452

**Projected utilisation**

Average hours/day: 4,3

Average ldg's/day: 5

Avg. APU hrs /day: 6,4

Maintenance forecast until: 22.02.2002

Do not accumulate overdue when calculating next due

(Re)Calculate due times/dates

**List of due maintenance events sorted by expected due date**

WP	Type	Task / Package ID	Title	PN	SN	Exp. due date
<input type="checkbox"/>	SMP	SYSNR1300FH	smp package			21.11.1998
<input type="checkbox"/>	SMP	LC	smp package			30.11.1998
<input type="checkbox"/>	SMP	SYS700FH	smp package			13.12.1998
<input type="checkbox"/>	CMR	SMP 24-30-00-01	DC GENERATOR	8160-121	401	06.01.1999
<input type="checkbox"/>	SMP	SYS1500FH	smp package			06.01.1999
<input type="checkbox"/>	SMP	SYS300FH	smp package			06.01.1999
<input type="checkbox"/>	CMR	SMP 24-30-00-05	MAINT BATTERY C/D TCB 1001		501	09.01.1999

Datensatz: 1 von 125

To print a list containing all tasks in sequence of expected due date, click on 'print overview'.

To generate a "sign sheet" for a scheduled maintenance program package, select a package in the above list and click on 'print smp-package'.

To generate a workpackage and a sign sheet for selected tasks, check column WP for tasks you want to include, and click "Print Workpackage". Use the "Helper buttons" below to speed up the selection process.

WP uncheck all    WP check all due before    22.02.2002

Print Overview

Print smp-package

Print Workpackage

Exit

Selecting the aircraft in the drop down box on top will recall the data from the last planning session.

You can enter a date and supply aircraft times manually or you can have the system looking up the flight log module data for the date entered.



You must provide a projected utilization in the fields on the right hand side in order to do planning.

The system will use the data supplied here, times and projected utilization, to calculate the next due for each task. This does also work backwards. E.g. if there is no maintenance event log record available for a certain task, the due date/time might be in the past compared to the date supplied.

You can play around with the values for aircraft time at the given date and the projected utilization to calculate "what if" scenarios e.g. to optimize aircraft rotation schedules.

If the check box "Maintenance forecast until" remains unchecked, the system will calculate only one "next due" for each task. If you check this box and supply a date in the until field, the system will calculate all recurrent events until the supplied date for each task as well.



This might become a lengthy process if you have the system calculating all tasks for several years.

You can specify whether you want the overdue from the last check accumulated or automatically deducted from the repeat interval.

### Example 2-5. Accumulating overdue

Assume an A2 check with an interval of 800 FH would have been due at 800 FH and you complied with at 807 FH, so you have been 7 FH overdue. If you decide to accumulate the overdue then AMPLAN will give you the next due a 1607 FH. If you say you do not want to accumulate the overdue, the system will give you a next due at 1600 FH.

To do the actual planning, click on "Calculate due times/dates". After a while the list with due tasks will be filled with all the tasks assigned to this aircraft and to any component installed in this aircraft.



The due time is always shown as aircraft time.

E.g. a generator with a brush check interval of 600 hours was installed with 500 hours remaining at an aircraft time of 1500 FH TAT, the due time for the brush check will be calculated as 2000 FH TAT.

## 2.7.1. Printing of planning module output

In order to use the output of the planning module, the list of due maintenance item can be printed in various formats. The formats that everybody needs are an overview list, a sign sheet for phase checks and a sign sheet for work-packages containing manually selected tasks. AMPLAN allows to filter and sort the overview list for better readability. When you click "Print Overview" a small dialog will appear and allows you to make your selection.

You can print a sign sheet for a SMP package (phase check) simply by moving (moving means, set the record marker) to the package you want to print and click on "Print SMP package". This will print a list of all individual tasks belonging to this package with fields for Mech. and Insp. to sign the task off. After the last task there is a release to service text according to JAR 145 regulations which can be signed by a certifying staff. This printout can be used directly at the hangar-floor.

To print a sign sheet for a work-package, simply check the column WP for all tasks you want to appear on the sheet and click "Print Workpackage". This will produce a similar report as for a phase check but this time for all your manually selected tasks.

## 2.8. Maintenance event log module

The event log module is used to enter and maintain the compliance data of maintenance events. It is designed to store data for aircraft and component related maintenance likewise.

When this module is opened, or another aircraft or component is selected, the log is queried and the most recent record for the selected aircraft or component is shown first.



Figure 2-18. Maintenance event log

- ❶ When you select a PN here, then only the SN's for that PN are shown in the SN box.
- ❷ Only CMR tasks assigned to the selected component are shown here.
- ❸ Fill in the time the task compliance was overdue if you do not want to accumulate the overdue the next time you do planning, see Section 2.7.

On a new record, when the date has been entered, the component time can be calculated automatically. To do this click the "Get comp. time" button.

The same applies to SMP and OOPR tasks likewise. The difference is that after an aircraft has been selected the packages of the assigned SMP will be selectable or the list of assigned OOPR tasks will be selectable.

### 2.8.1. Printing of maintenance records

To print the maintenance record for a component open the parts tracking module and go to the tab "Component maintenance requirements", see Section 2.6. From here you can print the component maintenance record for each component.

For the aircraft maintenance record open the aircraft module. On the tab "Standard reports", see Section 2.1.3, you can select to print the record for SMP packages, OOPR tasks, SB/AD status aircraft and SB/AD status for currently installed components.

# Chapter 3. Additional / Optional modules and or functionality

## 3.1. PIREPS - Pilots reports analysis

The PIREP analysis module provides you a to simple means of **preventive maintenance** effectivity control. This is normally sufficient to satisfy your authorities requirements in this respect.

The PIREP analysis printout summarises the PIREPS per ATA chapter and 1000 fleet hours, which allows a comparison in the number of events per a specified period.

If this report is generated on a regular basis, e. g. monthly, you have a means of checking whether your preventive maintenance measures on ATA particular chapters do actually decrease the number of PIREPS for these ATA's.

### 3.1.1. Enable PIREP analysis

PIREPS are entered in the flight log module, see Section 2.2, via the button "Add PIREP". Clicking this button opens a dialog and allows to add a categorized PIREP for the aircraft you are currently entering flight log data. Selecting an ATA Chapter and clicking OK will store the PIREP for this aircraft and date. This is all you have to do to set AMPLAN up for PIREP analysis.

To evaluate the PIREPS stored in the system, open the PIREP form via the AMPLAN toolbar, see Section 1.4, "Analysis -> PIREP". On the PIREP form you have to specify a time period for which the PIREPS shall be evaluated. Clicking "Generate report data" will start the analysis. AMPLAN does look up all PIREPS stored for the period specified, does calculate the total hours flown fleetwide for the period and updates the database accordingly.

After the data has been generated successfully, the buttons "View raw data" and "Print report" will be enabled.

Now you can view all records selected to be evaluated, with the calculated number of PIREPS per 1000FH per aircraft and per 1000FH fleetwide, and print the summary report for the period.

## 3.2. Reliability analysis module

The component reliability analysis module is not implemented in the basic version of AMPLAN. This module generates reliability reports on all components tracked with AMPLAN and provides MTBR, MTBUR and MTBF for three time periods. This is last month, three month rolling average and over the whole period of stored component removals in AMPLAN.

## 3.3. Optional modules

Additional modules are available on request. Most of them are subject to heavy customization, e.g. a Workorder module will typically need to be designed according to your existing layout and procedures, but the AMPLAN framework is in most cases readily available.

Likewise with the stores module, since this needs to implement your existing procedures on e.g. receiving goods. The framework for the optional stores module includes a contact management system, quotation and purchase tracking and component cost analysis per aircraft and fleetwide.

Additional functionality, e.g. looking up data for the flight log module from an existing OPS database in your company are also common and no problem to be implemented.