Structures

AMP Reference: IAL/330/T Revision 00 Initial

Contents

1.0 GENERAL

The purpose of this section is to maintain the continuous airworthiness of the aircraft structure and to control corrosion to Level 1 or better (refer to “CORROSION PREVENTION AND CONTROL PROGRAM (CPCP)” for definition of Level 1 corrosion).

2.0 INSPECTION PHILOSOPHY

This section has been developed by considering the following sources of damage:

1. Metallics

(FD) Fatigue Damage

For FD, the damage initiation and subsequent damage growth is primarily dependant on the ground air ground loading variation, which occurs once per flight. Therefore, flight cycles (FC) are used as the unit for thresholds and repeat intervals. Some fatigue related SSI's are also sensitive to flight duration.

For these SSI's, a FH limit is stated in addition to the FC limit. The inspection is to be performed at whichever limit is reached first.

The structure inspection tasks selected for fatigue are derived from damage tolerance evaluation according to the criteria defined by FAR/JAR 25.571, Amendment 45. The FC and FH data is based on a combination of calculation, full-scale fatigue test tear down results, and in-service experience (where available).

(ED) Environmental Deterioration

Since deterioration caused by the environment (e.g., corrosion, stress corrosion) is mainly time dependant, the maintenance requirements are based on calendar time (Years).

(AD) Accidental Damage

For deterioration caused by accidental damage, it is considered that major damage such as that caused by bird impact, or ground handling equipment, will be detected by routine inspections. AD consists of minor damage which could result in fatigue and/or corrosion damage, and which could propagate undetected. In the analysis, the fatigue and environmental effects of the accidental damage are considered. A dedicated AD task is not selected; the AD requirement is consolidated into either the ED or the FD task, or both, according to the AD consequences. AD is therefore subject to maintenance requirements expressed in FC (and FH) or calendar time or both.

2. non-metallics

(AG) Ageing Deterioration

Deterioration caused by ageing considers loading conditions and environmental conditions. Inspection intervals and thresholds are based on calendar time.

(AD) Accidental Damage

Deterioration caused by accidental damage is subject to inspection intervals based on calendar time.

The frequency of inspection is dependent on static strength reduction caused by the selected damage, combined with the likelihood of the selected damage occurring more than once during the selected interval.

As this kind of deterioration is random in nature, inspections shall be applied to all aircraft at each repeat interval without threshold.

3.0 INSPECTION LEVELS

According to the analysis procedure, for each Structural Significant Item (SSI), various inspection levels have been considered with the aim of selecting the lowest inspection level compatible with the type of damage and the expected damage growth. Therefore, one or more of the following inspection levels have been selected for each SSI:

- General Visual Inspection (GVI)
- Detailed Inspection (DET)
- Special Detailed Inspection (SDI)

4.0 ZONAL SECTION COMPATIBILITY

When General Visual Inspection (GVI) level has been selected for a particular structure inspection task in the Structure section of the MRBR, the inspection requirement is considered adequately covered by the equivalent Zonal (ZIP) tasks which are referenced in the ZIP reference column. The MRB Report Structure section GVI tasks which have a ZIP reference are therefore not listed as individual tasks in the MPD.

GVI maintenance tasks which are not compatible with the Zonal section are stated in the MPD as individual tasks. GVI SSI's which also require the addition of Temporary Protection Systems (TPS) will still be indicated as individual tasks in the Structure section. The TPS application remains a Structure requirement, but the inspection part of the maintenance task may be covered by the Zonal Inspection.

Refer to paragraph 4 of the introduction of the A330 MRBR Structure section for additional details.

5.0 SAMPLING PROGRAM

A. INTRODUCTION

The Sampling Program is designed to detect systematic deterioration caused by the environment on a group of aircraft selected from those which have the highest age within a considered fleet.

The Sampling Program is applicable to Environmental Deterioration (ED) SSIs, where the deterioration, should it occur, is considered as being progressive with age. SSIs which are susceptible to Accidental Damage (AD) are not considered for the Sampling Program.

Structure inspections fall into the following 2 categories:

100%

Corrosion tasks where accidental damage is likely or where in-service experience indicates that damage is likely are not selected for sampling. These tasks have a 100% threshold only. e.g.

534127-01-1.

100% + SAMPLING

Corrosion tasks where in-service experience indicates that damage is not likely are selected for sampling. These tasks have a sampling threshold. All aircraft not inspected as sampling aircraft must be inspected at the 100% threshold (24 years). e.g., 545126-02-1.

Based on the results of Sampling Program inspections:

– In case of findings, each operator should take appropriate corrective actions, such as change of

program concept to 100%, decrease of interval, application of TPS etc.

– In case of no findings, the current inspection program continues to apply.

B. SELECTION OF AIRCRAFT FOR SAMPLING PROGRAM

For each operator, the Sampling Program inspections are to be performed on the oldest 1/5 of the operator's A330 aircraft.

The oldest aircraft are defined as the aircraft with the highest age in years since their initial manufacturer's delivery date.

From MRBR Rev 17, the A330 sampling fleet is no longer determined by WV Group. The determination is done between PAX (A330-200/-300/-800/-900) or Freighter Aircraft (A330- 200F).

Operators with both PAX and Freighter aircraft should select the oldest 1/5 PAX aircraft and the oldest 1/5 of A330-200F.

For operators with more than one aircraft type in their fleet, e.g. A330 and A340, the Sampling Program aircraft should be determined per aircraft type, e.g., 1/5 of the oldest A330 aircraft + 1/5 of

the oldest A340 aircraft.

If the 1/5 sample of the operator’s aircraft is not a whole number of aircraft, the number is to be decreased to the next lowest whole number.

A minimum of one aircraft per operator must be selected for the Sampling Program. The maximum number of aircraft to be sampled per operator is 5 aircraft per aircraft type even if the total fleet size would lead to a higher number applying the 20% rule.

NOTE: Operators operating the same aircraft type in similar operational conditions and having established common rules acceptable to each operators' Airworthiness Authority may combine their fleets to form one fleet for the Sampling Program.

A minimum of one aircraft must be selected from each operator in the group, if not already selected by the above rule.

Any aircraft in a fleet is protected by the respective sample aircraft of this operator's fleet. If a "non-sampling" aircraft would be integrated into a new operator's fleet, it could become a sampling

aircraft. However, no retroactive maintenance is required i.e., all inspections are to be performed at their next due.

Example: An aircraft which was not a sample A/C is 7 years old has been acquired by another operator. All inspections with an interval of 6 YE would be due at the next 6 YE check, which is 12 YE after entering service.

Any significant changes to an operator's fleet will require a review of the Sampling Program aircraft.

This includes buying and/or selling aircraft and retiring aircraft from the fleet. Operators may contact Airbus for advice in the selection of the Sampling Program aircraft.

Sampling tasks only need to be performed on aircraft selected for Sampling. Therefore, only Sampling tasks applicable to the modification status of the selected Sampling aircraft need to be performed.

This means that some sampling tasks may not be performed on an individual operator's fleet. The fleet of the operator is protected by the tasks performed in the world fleet by operators whose sample aircraft are of the relevant modification status. Any significant findings will be reported and acted upon.

C. ARRANGEMENT OF INSPECTIONS

For the selected sampling A/C, the inspections commence at the Sample or 100% Threshold (whichever occurs first) and continue at each subsequent repeat interval (Sample Interval or 100% Interval, whichever occurs first).

NOTE: Different source document requirements (e.g., MRBR and ALI) consolidated in one MPD task may lead to a task which has a 100% Threshold/Interval which is lower than the Sample Threshold/Interval. In this case the more conservative 100% requirement must be followed.

To ensure that operators do not miss 100% requirements on sampling aircraft, the 100% values have been added to the Sampling requirement in these cases.

NOTE: For the Threshold/Interval selection of the sampling A/C it is mandatory to follow the sampling logic as shown in below paragraph "SAMPLING PROGRAM ILLUSTRATIONS".

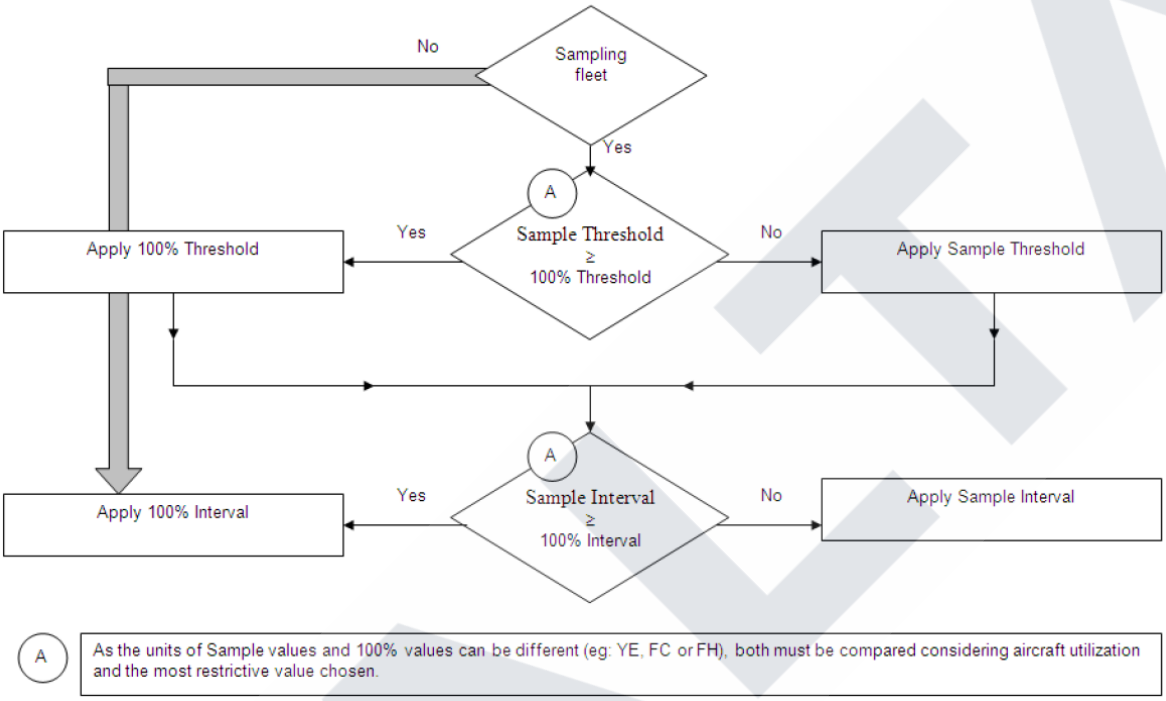
NOTE: For all aircraft not selected for sampling only the 100% Threshold/Interval must be taken into account (refer to the suitable example on the following pages).

D. SAMPLING PROGRAM ILLUSTRATIONS

A chart presenting the way to deal with the sample/100% threshold and interval is shown below.

The Sampling Program aircraft should first be selected before the subsequent planning of the SSI details.

NOTE: The example Sample Program Illustration are no longer listed in the MPD. Please refer directly to the Section D Introduction of the MRBR for accessing them.



6.0 CORROSION PREVENTION AND CONTROL PROGRAM (CPCP)

A. INTRODUCTION

The Structure section includes requirements to control corrosion to Level 1 or better on all structural details, elements or assemblies whose failure could affect the structural integrity necessary for the safety of the aircraft

All Corrosion Prevention and Control Program (CPCP) requirements are indicated by the code

'CPCP' in the “SOURCE” column.

Some Calendar-time tasks are also covered by the Sampling Program, i.e. they have a Sample Threshold/Interval. For these tasks, the 100% Threshold is the time at which the task becomes a

CPCP task.

B. CORROSION LEVEL DEFINITIONS

The severity of the corrosion damage is categorized into three 'Levels' as follows:

Level 1 Corrosion

Corrosion damage that does not require structural reinforcement or replacement.

or

Corrosion occurring between successive inspections exceeds allowable limit but is local and can be attributed to an event not typical of operator usage of other aircraft in the same fleet (e.g. Mercury spill).

Level 2 Corrosion

Corrosion occurring between successive inspections that requires a single rework/blend out which exceeds allowable limits as defined by the manufacturer (SRM, SB, etc.), requiring a repair/reinforcement or complete or partial replacement of applicable structure.

Level 3 Corrosion

Corrosion found during first or subsequent inspection(s), which is determined (normally by the operator) to be an urgent airworthiness concern requiring expeditious action.

C. CPCP RULES

The effectiveness of the CPCP is determined by following the General Rules applicable to the Structure section and by following the rules listed below:

Level 1 Corrosion Findings

Should inspections consistently reveal corrosion Level 1 findings for a given area during repeat inspections on particular aircraft operated in similar conditions, then the existing program is considered effective for the concerned area, and no change to the program is necessary.

Specifically for Landing Gear corrosion findings at Overhaul, Level 1 corrosion is interpreted to include cases of light corrosion that is within allowable limits but requires structural replacement, since a repair has not been defined or is not economically viable.

Level 2 Corrosion Findings

Should inspections reveal that corrosion is Level 2 for a given area during repeat inspections, then the existing program is not effective for the concerned area of the particular fleet.

In order to control corrosion to Level 1 or better, consideration should be given to one or more of the following corrective actions:

- Decreasing the inspection threshold/interval.
- Considering a higher inspection level.
- Re considering the Program Concept.
- Application/More frequent application of Temporary Protection System.
- Embodiment of preventive modifications, where applicable.
- Installation of parts with improved protection standard, where applicable.

In this way, the program is self-regulating and will adjust itself to the optimum program.

Level 3 Corrosion Findings

Should inspections reveal that corrosion is Level 3 in a given area, then the existing program is not effective for the concerned area.

In addition to the considerations given for Level 2 corrosion, an action plan calling for a one-time inspection of the concerned area should be expeditiously agreed with the local Aviation Authority and carried out on all aircraft of a similar age or older.

Airbus may be consulted to determine whether or not the airworthiness is affected. In this case all details of findings are to be promptly reported for detailed evaluation and the assistance required clearly expressed.

7.0 FATIGUE MONITORING PROGRAM

A. GENERAL

The Fatigue Monitoring Program (FMP) is defined to indicate unexpected early occurrence of fatigue related deterioration on metallic structure.

The FMP tasks are established for inspection in advance of the calculated 100% Fatigue Damage (ALS Part 2) threshold inspection. The FMP tasks are expressed in calendar time to enable operators to plan task accomplishment within existing planned heavy maintenance checks (i.e., at 6 years multiples or equivalent operator's heavy maintenance event interval).

The process to establish the FMP has been discussed and accepted by the EASA certification and aircraft maintenance branches.

The FMP is part of the Airbus Ageing Airplane monitoring process. FMP tasks selection, task reviews and adjustments of the global FMP are addressed in the Structure Task Group (STG) meetings.

The FMP allows operators to adjust or remove a FMP task from its Operator's Maintenance Program (OMP). This is based on confirmed nil findings/non-significant findings on a certain proportion of the operator's fleet. This could be done through Operator's Reliability Program.

FMP requirements are identified as "MRB FMP" in the MPD source column.

B. FMP Applicability

The FMP is a configuration-based monitoring programme.

All aircraft within the operator's fleet in the structural configuration identified in the FMP task applicability are subject of the FMP requirement.

C. FMP Requirements Fulfilment

The aim of a FMP requirement is fulfilled in case at least 10 aircraft within one operator's fleet (or from different operators belonging to the same airlines group, managed by the same maintenance organization and with identical FMP task content on all OMP) have accomplished the FMP task at the inspection threshold and reported (see paragraph: FMP Tasks Reporting).

Once FMP requirement is fulfilled, the FMP task may be adjusted or deleted from the Operator's Maintenance Program (OMP), depending on the FMP requirement type (see paragraph: FMP Task Type).

Credit cannot be taken from previous accomplishment of FMP tasks by other operator unless managed under the same maintenance organization.

Credit can be taken from previous accomplishment of former related Fatigue Sampling tasks as long they were managed by the same maintenance organization at any of the previous heavy maintenance checks of the aircraft.

Alternatively, operators may accomplish FMP tasks on all aircraft subject of FMP task applicability in their fleet and update their OMP based on the global adjustment of the FMP inspection task. This is performed during STG meetings and provided in the MRBR Appendix 14 (FMP).

D. FMP Tasks Type

There are two types of FMP tasks depending on whether there is an existing associated 100%

fatigue requirement (ALS Part 2) or not:

- FMP tasks without associated ALS Part 2 (NOTE A FMP tasks)
- FMP tasks with associated ALS Part 2 (NOTE B FMP tasks)

(1) FMP tasks without associated ALS Part 2 (NOTE A FMP tasks)

FMP tasks without an associated ALS Part 2 task are designated as NOTE An FMP tasks.

NOTE A FMP tasks provide a threshold (in Calendar Time) and a repeat interval at 6 YE.

NOTE A FMP tasks are subject for threshold adjustment in OMP based on its inspection results:

- In case a minimum of 10 aircraft have been inspected at the NOTE A FMP task threshold Airbus should be informed about the inspection results (see paragraph: FMP tasks Reporting).
- Airbus will acknowledge receipt of the inspection result via Tech Request.
- The operator may increase the NOTE A FMP task threshold by 6 YE (or the equivalent operator's heavy maintenance interval) in its OMP.
- The adjusted NOTE A FMP task threshold is applicable for the individual operator even in case the fleet is renewed.

Example:

An operator accomplished a NOTE A FMP inspection on 10 MSN with NIL findings, reported the inspection results to Airbus and increased the NOTE A FMP task threshold from 18 YE to 24 YE. At an aircraft age of 22 YE the operator renews its fleet and adds new aircraft with the same configuration as the one subject for the NOTE A FMP task. The NOTE A FMP task threshold remains at 24 YE in the OMP, so the operator can take benefit from previously accomplished inspections.

Operators with a fleet of less than 10 aircraft as per NOTE A FMP task applicability may also report nil-finding/non-significant findings task accomplishments to Airbus. This data will be used to support global NOTE A FMP tasks adjustment /deletion during periodic STG meetings.

(2) FMP tasks with associated ALS Part 2 (NOTE B FMP tasks) FMP tasks with an associated ALS Part 2 task are designated as NOTE B FMP tasks.

NOTE B FMP tasks provide a threshold (in Calendar Time) to be accomplished in advance of the associated 100% fatigue requirement (ALS Part 2).

NOTE B FMP tasks are subject for deletion in OMP based on its inspection results:

- In case a minimum of 10 aircraft have been inspected at the NOTE B FMP task threshold Airbus should be informed about the inspection results (see paragraph: FMP tasks Reporting).
- Airbus will acknowledge receipt of the inspection result via Tech Request.
- The operator may delete the NOTE B FMP task from its OMP.

Example:

An operator has more than 10 A/C in line with the applicability of an FMP task provided. After accomplishment of 10 inspections in advance of the associated ALS Part 2 FC/FH inspection requirement the results should be reported to Airbus. Airbus will acknowledge receipt of the report and the operator can terminate this NOTE B FMP task from its maintenance program.

Operators with a fleet of less than 10 aircraft as per NOTE B FMP task applicability may also report nil-finding/non-significant findings task accomplishments to Airbus. This data will be used to support global NOTE B FMP tasks evolution/deletion in the FMP task reviews during periodic STG meetings.

Rules to apply for a NOTE B FMP task and its associated 100% fatigue requirement (ALS Part 2):

1.

In case the NOTE B FMP task and its associated 100% fatigue requirement (ALS Part 2) have the same inspection procedure, it is up to operator's choice to decide whether to count the NOTE B FMP task accomplishment as the ALS Part 2 Threshold inspection.

Above statement is not applicable in case the NOTE B FMP task and its associated 100% fatigue requirement (ALS Part 2) have a different inspection procedure.

2.

If an airplane reaches the FC or FH of the associated 100% fatigue requirement (ALS Part 2) threshold in advance of the NOTE B FMP task threshold then the 100% fatigue requirement has to be followed (ALS threshold FC or FH, whichever occurs first) and the NOTE B FMP task applicability may be updated to exclude the very aircraft from the OMP.

E. FMP Tasks Reporting

FMP tasks are subject for review based on operator's feedback of FMP tasks accomplishment.

(Refer to MRBR Appendix 6 for reporting system).

Reporting is key for FMP global adjustment and efficiency.

Minimum data that the report should contain:

- MSN
- Inspection date
- FC and FH
- Inspection result (Findings/nil findings)
- In case of findings: Damage description

8.0 GENERAL RULES APPLICABLE TO THE STRUCTURE SECTION

1. The Maintenance tasks are to be carried out 'at or before' the limits stated for Sample

Threshold/Interval and 100% Threshold/Interval. Where a task has more than one limit, e.g. one in FC and another in calendar time, the limit expiring first shall apply.

2. The Threshold is the time at which the maintenance requirement is first due.

• For FC or FH tasks without MOD applicability, the 100% thresholds are counted from first flight.

• For FC or FH tasks with MOD applicability, the 100% thresholds are counted from point of MOD embodiment, unless otherwise stated.

• For tasks in Years, the sample thresholds and 100% thresholds are counted from the date of initial delivery from the manufacturer, unless otherwise stated (NOTE 8).

3. For repeat maintenance tasks, the interval starts at the time of the last maintenance tasks performed.

4. Thresholds and intervals quoted in calendar time in this section include aircraft time in and out of service. In other words, operators will not, in general, be allowed to take credit for time out of service or storage periods to extend corrosion inspection intervals.

5. It is assumed that the structure to be inspected is in a state of cleanliness which allows a satisfactory inspection to be carried out at the required inspection level.

Where existing Temporary Protection System (TPS) permits unobscured assessment of the condition of the structure, TPS may remain in place for the inspection.

6. If damage is found or suspected (such as bulging skin) then the full extent of any damage must be clearly identified using appropriate inspection techniques and/or disassembly when necessary. This may require additional access to that stated for the maintenance task.

All damage is to be evaluated and repaired in accordance with documentation acceptable to the relevant Airworthiness Authority.

7. If inspections indicate evidence of deterioration, appropriate further actions must be taken to prevent similar deterioration occurring in the operator's fleet.

For corrosion findings refer to Corrosion Prevention and Control Program in this section.

8. The following applies to Temporary Protection System (TPS) application:

Prior to any application of TPS, perform an inspection of the area at the inspection level for the task quoted in calendar time.

Prior to re fitting/re connecting/re installing parts removed to gain access to the inspection area, TPS is to be applied to each SSI, as quoted in the TPS column of this Structure section, at least as frequently as the calendar time thresholds and intervals of the respective SSI. For SSI's where the FC or FH limit is reached before the calendar time limit, consideration should be given to application of TPS at the FC or FH limit

The Type of TPS to be applied is provided in the TPS column of the Structure section. When TPS is only applied to a selected area, details are provided as a note in the Description column.

Sampling Program tasks do not have TPS selected in the Structure section. If an operator chooses to apply TPS to a particular SSI for aircraft inspected in accordance with the Sampling Program, these aircraft are no longer representative of the non-sampled aircraft. In this case, TPS must be applied to all aircraft in this SSI area, including the aircraft not selected for sampling. This task then effectively becomes 100% for those specific aircraft.

CAUTION:

Do not apply TPS on oxygen systems, control cables, pulleys, Teflon bearings and lubricated surfaces.

Drain valves and all open orifices are to be protected from ingress prior to temporary protection being applied.

9. The access column may contain one of the following instructions concerning insulation blankets:

Insulation = Insulation to be removed from the inspection area.

Note 1 = Insulation to be displaced as required to complete the required maintenance task.

10. Ensure wet insulation blankets are dried prior to reinstallation or replaced with new.

11. Ensure that all drain holes and drainage paths are clear from obstruction.

12. The condition of the paint system should be verified during the inspections. Re protection should be applied where necessary.

13. The requirements stated in years were determined for an aircraft operated in a moderate humidity environment and not subjected to corrosive products.

Any operators who routinely operate in humid or marine environments and/or carry corrosive cargo such as seafood, may find that the calendar time maintenance tasks stated in this MPD are not sufficient to control corrosion to Level 1 or better. Operators in this category should take appropriate further actions.

14. Operators shall report inspection results related to SSIs to the manufacturer in accordance with the Maintenance Task Reporting System. Refer to the General Introduction paragraph 15.

Note: This reporting requirement does not take precedence over existing national requirements for occurrence reporting.

15. Based on reports made through the Maintenance Task Reporting System, Airbus will:

- Inform all the operators of the significant discrepancies discovered on the A330 fleet.
- Make the appropriate recommendations.

16. “Touch and Go" Cycles can be neglected if they are less than 5% of the total number of Flight Cycles up to threshold inspection or between two consecutive inspections.

Each "Touch and Go" cycle above 5% is to be counted as one Flight Cycle, up to threshold inspection or between two consecutive inspections.

17. Additional information concerning SSI inspections is provided in the following Airbus supporting publications:

• Maintenance Review Board Report (MRBR)

• Airworthiness Limitation Items (ALI)

- Aircraft Maintenance Manual (AMM)
- Non-Destructive Testing Manual (NTM)
- Structural Repair Manual (SRM)

18. In the event that the first task is accomplished very early, such that the period (Calendar time, FC, FH) between initial task accomplishment and the threshold is greater than the interval, the next task can be performed at the threshold (rather than the repeat interval).

9.0 SECTION NOTES

NOTE 1 to 6 and 8 to 10:

The Content of MRBR Section D Notes is given as full text in the corresponding MPD task.

NOTE 7: Minimum major improvements for cabin floor structure. Refer to SIL 53-091 / ISI 53.00.00106 for details.

10.0 WEIGHT VARIANT APPLICABILITY

The A330 aircraft have different fatigue inspection requirements for the various Weight Variants (WV) of each aircraft. The Weight variant represents the delivery standard of each aircraft.

The applicable Weight Variant for each individual aircraft can be found in Table 1 of the "Aircraft Allocation List" in the Structure Repair Manual (SRM) Intro.

Table 2 of the SRM "Aircraft Allocation List" gives additional data for aircraft which have the weight Variant status amended due to modifications or Service Bulletin embodiment.

To minimize the number of individual inspection requirements, the Weight Variant requirements have been grouped where they are similar. The group number is stated in the Structure section "APPLICABILITY" column. Refer to the details below:

WV Group	A/C Series	Weight Variants
GROUP 33B	A330-200	010, 011, 012, 013, 604

11.0 AIRCRAFT UTILIZATION LIMITS / LIMIT OF VALIDITY (LOV)

A330 aircraft are certified against utilisation limits expressed in FC and FH.

The Limit Of Validity (LOV) and Maintenance Program Publication Trigger are provided in the introduction of the A330 ALS Part 2 Document.

12.0 FC- AND FH-OPTIMIZED DATA SETS

A. BACKGROUND

Airbus periodically conducts Structural Fleet Surveys to monitor Fleet usage. The 2008 Fleet Survey revealed a larger range of A330 fleet FC and FH utilisation than previously recorded. Existing Thresholds and Intervals of the range-sensitive fatigue tasks therefore required revising to ensure the coverage of the A330 aircraft fleet.

An initial assessment indicated that this would result in very significant Threshold/Interval reductions

if applied to the existing method of calculation (single set of fatigue figures). This would have penalised both short and long range A330 operators. In order to limit the impact, Airbus produced 2 sets of fatigue data for all Thresholds/Intervals of fatigue inspection tasks sensitive to range. These 2 sets of data are produced based on a trade-off between Flight Cycles (FC) and Flight Hours (FH).

This allows optimisation of the Maintenance Program according to the actual aircraft operation. This data was first published in MRBR rev 14 and ALI doc rev 18 (ALS Part 2).

B. USE OF FC- AND FH-OPTIMIZED DATA

Both sets of data ensure the continuous airworthiness of the aircraft. Both sets of data are approved for use on any A330 aircraft without restriction regarding the utilisation.

Operators can monitor their aircraft utilisation and optimize requirements accordingly. For a given task, operators can use either set of FC or FH optimized data, as long as the pair of FC and FH values from the same optimized data are selected.

Example:

Threshold/Interval:

FH and FC values from FH-optimized data

or

FH and FC values from FC-optimized data

Either set of data can be selected by any operator. However, it may not be optimum.

For example, an operator with high annual FH utilisation will have a more optimum planning when using the FH-optimized fatigue data. However, the operator could use the FC-optimized data and still have an approved but non-optimized program. This is because the operator would be penalised by the shorter FH limits of the FC-optimized program and would do the tasks earlier (threshold) or more frequently (interval).

Consequently, the operator can select whichever set of figures is most appropriate for a particular MSN, providing that the pair of FC and FH values are selected from the same set of data. In other words:

– The FC limit of the FC-optimized set can be selected, providing that the associated FH limit is also selected (not exceeded).

OR

– The FH limit of the FH-optimized set can be selected, providing that the associated FC limit is also selected (not exceeded).

If the above rules are followed, both sets of data ensure the airworthiness of the aircraft.

The selection between the FC- and the FH-optimized sets can be done by the operator without any restriction providing that the FC limit and the FH limit from the same set are considered (not exceeded).

The limits for one task (FC and FH) must be taken from the same set of data.

C. OPTIMISATION OF PLANNING ACCORDING TO FC OR FH UTILISATION

Paragraph 11.2 states that operators can use either FC- or FH-optimized data to develop a maintenance program and that both sets of data ensure the airworthiness of the aircraft. For planning purposes, further optimisation could be performed if desired. Any operator can choose to have a simple planning scenario by selecting one set of data (FH or FC), or can choose a more optimised planning scenario, depending on utilisation. Some examples are given below:

• Select the most appropriate data set for their fleet, either FC- or FH-optimized.

E.g., select FC- or FH-optimized set for the entire fleet.

OR

• Select the most appropriate set by sub fleet or MSN within their fleet, FC-optimized for aircraft with high average FC utilisation and FH-optimized for aircraft with high average FH utilisation.

E.g.: Select FC- or FH-optimized set according to sub-fleet or individual MSN utilisation.

OR

• For a given task: Select the optimum set per MSN according to individual MSN utilisation. The optimum planning for some aircraft will involve selecting a mixture of FC-or FH-optimized tasks on a task-by-task basis. The full task must however be taken, i.e., pair of FC and FH values. From either FC- or FH-optimized set.

E.g.: selecting tasks (pair of FC and FH values) from FC- or FH-optimized set on task-by-task basis.

Refer to the following table which summarises the pros and cons of the 3 main planning scenarios:

METHOD	PROS AND CONS
SIMPLE METHOD Select 1 set of data for fleet FC- or FH- optimized According to main fleet utilisation.	Easy to plan
	No flexibility for mixed A/C utilisation
	Potential earlier thresholds/ intervals for some A/C
SEMI- OPTIMIZED METHOD Complex to plan Some flexibility for mixed A/C	Complex to plan
	Some flexibility for mixed A/C utilisation
Select 1 set of data for each sub fleet or MSN FC- or FH optimized. According to utilisation of each sub-fleet or MSN	Potential earlier thresholds/ intervals for some tasks & A/C.
FULLY OPTIMIZED METHOD Select optimum tasks per MSN FC- or FH optimized. According to optimum requirement for task.	Very complex to plan
	Full flexibility for all A/C utilisations
	Optimum thresholds/intervals for all tasks & A/C

Any of the above approaches is acceptable and all ensure the airworthiness of the aircraft. Operators can therefore choose between a simple and a more optimized planning method.