



# **Bermuda DCA DAI seminar**

**November 2008**

**Module 4**

# Approval of Organisations for the Approval of Maintenance Programme Amendments



## What is a Maintenance Programme?

- *A Maintenance Programme is comprised of a schedule of maintenance tasks with documented management procedures which describe how the scheduled maintenance will be managed.*
- *The scheduled tasks are initially developed from the TCH/STCH/OEM schedule recommendations*
- *Each aircraft may require individual task development as each aircraft service history develops – e.g. corrosion, repairs, modifications*



## *Scheduling information may come from a range of documents*

- *MPD*
- *CMM*
- *Repair approval instructions*
- *SB, SIL*
- *STC*



*Many of the procedures required for the management of scheduled maintenance are contained in the TCH Maintenance Planning Data documents*

*Effective management procedures being managed by suitably qualified and experienced personnel are essential to ensure that the maintenance schedule is applicable and effective*



## 767 MAINTENANCE PLANNING DATA

### E. SUPPLEMENTAL STRUCTURAL INSPECTION PROGRAM

Where the initial scheduled inspection program does not ensure timely detection of potential fatigue damage in a structural item, supplemental fatigue related inspections will be required and are listed as Airworthiness Limitations in Section 9. Such supplemental inspections will begin at or prior to the threshold defined in Section 9 of this document.

One suggested supplemental structural inspection program has been developed for all affected structure, using the Damage Tolerance Rating System, defined in Appendix B of this document. The resulting inspections are identified by an MPD Item Number containing a sequence number of 50 or higher. These inspections must be accomplished at or prior to the specified threshold for the task.

Escalation of the initial scheduled inspection program interval may affect some 50 series items and cause additional items to require a fatigue related supplemental structural inspection. Therefore, when the Section 9 Type 2 structure design implementation threshold is reached, the repeat frequencies must be reduced back to the published Section 8 intervals. This will occur at 50,000 cycles (200, 300PASS airplanes) or 40,000 cycles (300F, 400ER airplanes).

Operators who do not plan to use the supplemental structural inspection program suggested in Section 8, may complete the basic DTR Check Forms, contained in Appendix B, and select the method of inspection and corresponding repeat intervals for their own program. A phased inspection program may be considered for tasks which allow percentage inspections at each major structural visit.

### F. CORROSION PREVENTION

Inspection requirements are determined on the basis of continued airworthiness to preserve or restore the inherent corrosion prevention measures and structural surface finishes.

Should corrosion be detected or should the corrosion inhibiting compound exhibit signs of deterioration during the performance of a structural inspection, the Corrosion Prevention Manual (CPM) - D6-82580 should be referred to for appropriate corrective action. The CPM provides general information on inspection, detection, and removal of corrosion as well as preventive maintenance practices for corrosion control affecting the Boeing Model 767. Tasks in which periodic application of corrosion inhibiting compounds is recommended, are contained in Section 10 of this document and in



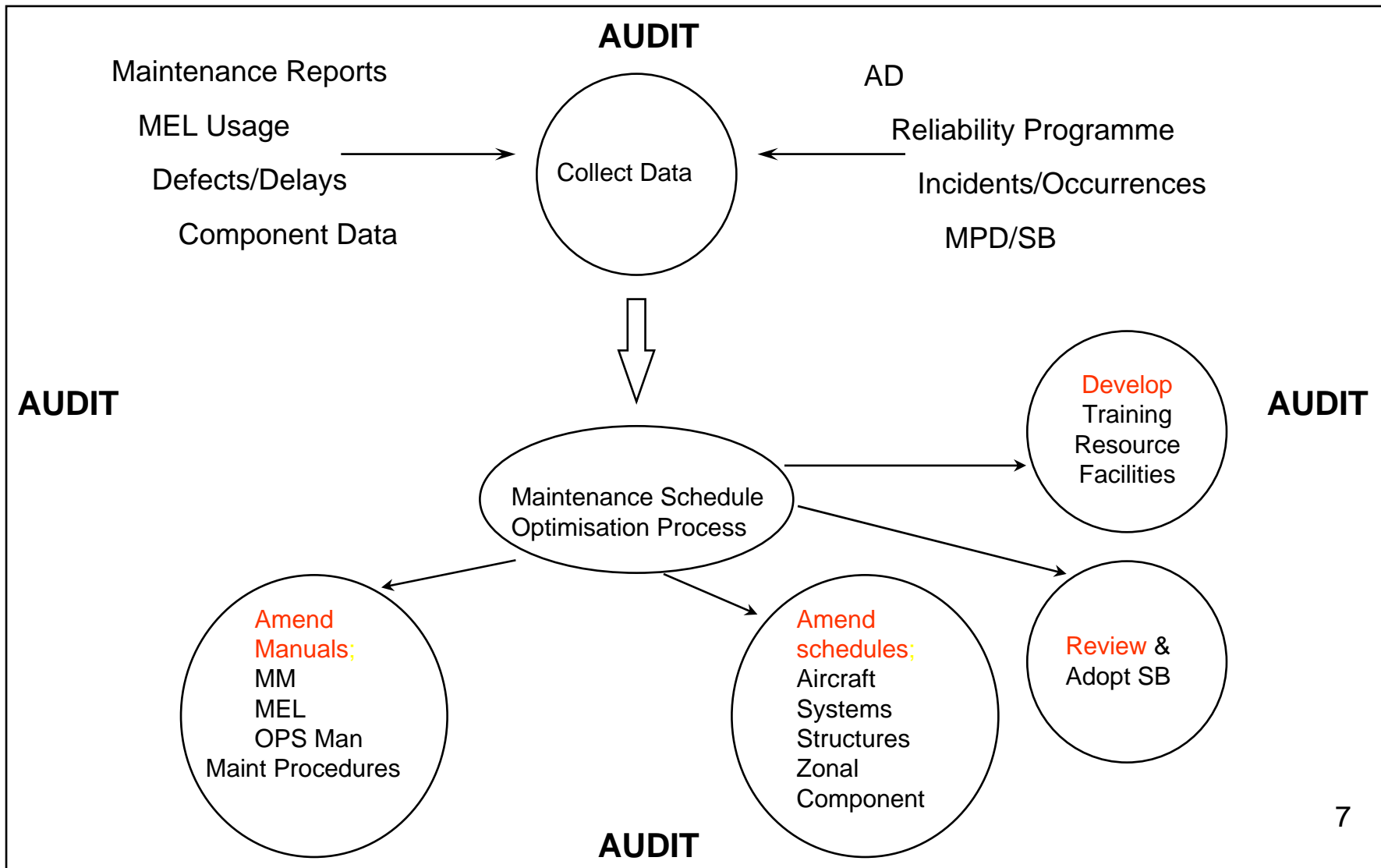
*Powerplants are often leased by operators in a separate arrangement to the airplane itself*

*Leasing arrangements may be complex and include management of the engine off-wing maintenance*

*The off-wing engine maintenance may be incorporated in engine off-wing workscope documents – these worksopes should form part of the approved maintenance programme*



# Integrated Maintenance Control Programme





Prior to approving the scheduled maintenance section of a maintenance programme *it is essential to ensure that the management procedures and personnel managing the schedule are adequate and that the organisation structure and management are capable of effectively managing the schedule*

*Alaskan Airlines!*



- Provision for the control of Maintenance Programme or Schedule Amendments is contained in Part M.A.302 (e) – Maintenance Programme Approval by Sub part G organisation (see also appendix 1 to AMC M.A.302)



- Approval may be issued to
  - Sub Part G approved organisation with approved procedures in CAME
- Approval may be used for control of
  - ‘In House’ Programmes / Schedules
  - Contracted Operators
- Ultimate Responsibility for effectiveness of Programme / Schedule (Part M.A.301) remains with operator



- Personnel
- Nominated Maintenance Programme / Schedule Controller to liaise with CAA and ‘manage’ control of Programme In-House
- Sufficient numbers of trained and competent personnel with knowledge of
  - Reliability Centred Maintenance
  - MSG Analysis and MRB Procedures (as applicable)



- Type Certification Requirements
- Aircraft or System or Component (Type)
- Organisation Procedures relating to Schedule or Programme Amendment Control
- Requirements applicable to control of Schedules / Programmes including Powerplant and Structures Programmes



The MP is an important feature of the airworthiness management process.

In order to manage the MP the operator will need to employ specialists

- **Systems**
- **Weight Control**
- **Powerplant**
- **Structures**
- **Maintenance Programme Management**
- **Reliability Programme management**



## The role of the specialists

- *Assessment of ICAW – SB, SIL, MPD, AD, CMM*
- *Continuing Review of fleet performance – reliability, MP effectiveness, ASR/MOR, strip reports, check findings, function check reports, corrosion findings*
- **Planning**
- **MOR**
- **Action/follow up to MOR/ASR/SDR**
- **Raise Engineering Orders as necessary**



## The role of the specialists – cont.

- Liaison with TCH/OEM/CAA
- Liaison with operations
- Liaison/oversight of service providers – *e.g. maintenance, ground operations*
- Review of operator technical instructions
- MEL/ADD rates
- Trend monitoring reports
- Preparation of work scopes – *esp. Powerplant*



In order to fulfil the function associated with maintenance programme management the specialists require

- **Specialised technical training/qualifications**
- **Familiarity with the TCH procedures**
- **Knowledge of MP management processes**



There is no idealised organisation structure for the management of maintenance programmes – the organisation should have the following features

- **Independent Quality Audit**
- **Sufficient numbers of qualified specialists**
- **Appropriate level of management**
- **Reporting lines within the airworthiness management structure**
- **Applicable and effective procedures to ensure appropriate liaison and decision making**



## Optimisation could result in the following changes to the Scheduled Maintenance Programme;

- Change to compliance interval category (FH, FC, Calendar, Check etc)
- Escalation or reduction of compliance interval
- Revision of task or process (insp, CK, FC, OPC, CM, OC, HT etc)
- Revision of accomplishment instructions
- Deletion of Task or Process
- Revision of workscope
- Addition of tasks



- Procedures to be adopted
  - Reliability Monitoring (Part M.A.302 (d) – AMC M.A.302 (d))
  - Task escalation and adjustment
  - SB Policy, Review and Assessment
  - MP / MS Review and Revision
  - Independent Quality Audit
  - Component Equipment & Structures In-Service Programme Review
  - Programme Rules



- Maintenance Procedures effectiveness Review and Amendment
- MPD Review and Assessment
- Quality Audit
- Variation Procedures
- Operator / Maintenance Liaison
- Sub-Contractor and Supplier Evaluation
- Training



- Reliability Procedures - Reliability review must additionally take account of
  - Maintenance Standards
  - Operating Rules
  - Aircraft Age
  - SB / Mod. Standard
  - Utilisation
  - Maintenance Procedures



## Programme / Schedule

Could be divided into two parts;

- Part 1
  - not subject to organisation control - includes CAA approval criteria and safety related maintenance
  - conventional CAA Approval Procedures apply
  - may have different Scheduled Maintenance 'Variation' criteria applied.
  - may include Powerplant 'off-wing' Programme



- Part 2
  - controlled by organisation in accordance with approved procedures
  - Programme adjustment criteria and policy to be agreed with CAA
- All tasks to be cross-referred to ‘Source Requirement’ (e.g. MRB) - to aid Quality Audit and ensure traceability (Part M. appendix 1 to AMC. M.A.302)
- Line / Base Scheduled Maintenance may be delineated in check cycle



The scheduled maintenance tasks are often transcribed on to *Task Cards*

*The task cards are then used by the maintenance supplier to control the maintenance at the point of delivery – hangar, line etc.*



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				<p><b>Note:</b> No CIC treatment is required if existing CIC'S are not removed. If CIC'S were removed, Issue a NR card to treat locally for uniform coverage.</p>																																																							
		1.		1. Perform a general visual inspection of right horizontal stabilizer and elevator, exterior.																																																							
		2.		2. Perform a detailed visual inspection of right horizontal stabilizer upper skin in area of attach fasteners through upper rear spar chord and upper span-wise splice stringer S-3 from outboard edge of stab./body fairing to rib 5.																																																							
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The task card contains the Inspection  
Standard – *General Visual Inspection*

*The definition of General Visual Inspection is in  
the MPD programme rules – not on the task  
card!*



## 767 MAINTENANCE PLANNING DATA

- Inspection - Internal Surveillance -- A visual check that will detect obvious unsatisfactory conditions/discrepancies in internal structure and systems/powerplant installations. This type of inspection applies to obscured structure and installations which require removal of fillets, fairings, access panels, doors, etc.
  - General Visual -- A visual check of the exposed areas of the wing surface, fuselage, doors and door cutouts, and wheel wells that are visible without the use of ladders, workstands, etc.
2. The zonal surveillance task includes visual checks of all electrical wiring, hydraulic tubing, water/waste plumbing, pneumatic ducting, components, and fittings, brackets, etc., associated with systems which are included within the zone boundaries. The extent or the intended area of the inspection is defined by the access, if any, listed with each inspection item. Any fairings, panels, or other items which are removed/opened to gain access to a particular zone should also be inspected if they are not inspected in a separate defined zonal task. Adequate lighting and normal inspection aids are to be used as required, such as a flashlight and/or inspection mirror.
  3. Systems maintenance tasks which become redundant (precluded) as a result of a zonal surveillance task are listed in Appendix D to this document. These tasks are not intended to be itemized on the task cards.
  4. The access information for each zone is intended to serve as a guide during development of the operator's maintenance program. Based on the operator's access panel configuration, experience and scheduling requirements, the accessing requirements may be amended by the operator.
  5. Any doors and panels opened or removed during the zonal inspection program, and not having a separate defined zonal task, shall receive a general visual check.
  6. Excessive dust, debris, or overspray of corrosion inhibiting compounds, found during any inspection, are considered to be unsatisfactory condition possibly reducing the fire resistance of the airplane design. Cleanup of these materials should be a standard part of maintenance activity. (Reference Service Letter 767-SL-25-084 dated 23 March 1998).
  7. Inspection requirements are determined on the basis of continual maintenance to preserve or restore the inherent corrosion preventive measures and structural surface finishes.



*It is the responsibility of the operator  
maintenance programme management  
organisation – to ensure that the inspection  
standards are advised to the maintenance  
supplier – the task card will not do this*

*It is the responsibility of the maintenance  
supplier to ensure that the Inspectors are  
suitably trained in the inspection standards*



- **Task Card Development Process**
  - In accordance with approved procedures
  - subject to independent audit
  - ensure traceability in each case
  - Ensure that any additional data e.g. inspection standards – are included



## In conclusion:

- *A maintenance programme is a combination of management procedures as well as scheduled maintenance tasks*
- *In order to be applicable and effective a maintenance programme requires an integrated organisational structure and qualified personnel to manage the scheduled maintenance*
- *The management process is of primary importance – what is scheduled is meaningless without the management process*