

**INTRODUCTION - 777 MAINTENANCE PLANNING DATA****A. PURPOSE**

This Boeing 777 Maintenance Planning Data (MPD) document provides maintenance planning information necessary for each 777 operator to develop a customized scheduled maintenance program. This document lists all Boeing recommended scheduled maintenance tasks and satisfies (in part) the FAA requirement that a manufacturer provide "instructions for continued airworthiness" as specified in FAR 25.1529 - Appendix H. Periodic (scheduled) maintenance tasks outlined in this document may include, but are not limited to, the following sources:

- 777 FAA Maintenance Review Board (MRB) Report - Latest Revision
- Boeing 777 Service Bulletins (SB)\*
- Boeing 777 Service Letters (SL)\*
- 777 FAA Airworthiness Directives (AD's)\*
- 777 Certification Maintenance Requirements (CMRs)
- 777 Structural Airworthiness Limitations (AWLs)

NOTE: \*Service Letters, Service Bulletins and Airworthiness Directives must be reviewed by each individual operator and integrated into their maintenance plan where applicable.

The Boeing recommended scheduled maintenance tasks outlined in this document are applicable to current production and existing 777 airplanes as follows:

- AIRPLANES - 777-200, 777-200ER, 777-200LR, 777-300, 777-300ER, 777F
- ENGINES - PRATT & WHITNEY-PW4000 Series (PW4074/PW4077/PW4084/PW4090)
- GENERAL ELECTRIC-GE90 Series (75B/76B/85B/90B/94B/110B/115B)
- ROLLS-ROYCE-Trent 800 Series (875-17/877-17/884-17/892-17/892B-17/895)

The scheduled maintenance tasks in this document should not be considered as all-inclusive. Each individual airline has final responsibility to decide what to do and when to do it, except for those maintenance requirements identified as "Airworthiness Limitations" (AWL'S) or "Certification Maintenance Requirements" (CMR'S). Additional temporary requirements in the form of Service Letters, Service Bulletins and Airworthiness Directives are the responsibility of the individual airline to incorporate. Maintenance tasks recommended in engine, APU, and vendor manuals should also be considered.

The 777 is designed and manufactured (certified operating capability) as an airplane intended to be flown up to 180-minutes from a suitable airport. Propulsion systems, structures, and critical systems have been designed and thoroughly tested to provide the redundant levels of safety and reliability required for these Extended Twin Operations (ETOPS) flights.

The scheduled maintenance requirements listed in this document are required for both ETOPS and Non-ETOPS operations unless otherwise stated.

During ground test, flight test and in-service operations, other configuration, maintenance or operational features were identified that were necessary to maintain reliability standards appropriate for ETOPS operations. These are documented in the Reliability Assessment Board Final Recommendation Report (RAB FRR) Appendix 1 CMP for each baseline engine airframe combination and by the FAA/JAA letter for each engine derivative program. Reference to the RAB FRR Appendix 1 requirements and any FAA/JAA letters may be found in the 777 Type Certification Data Sheet T00001 SE, Note 5.



## 777-200/300 MAINTENANCE PLANNING DOCUMENT

The 777 Configuration, Maintenance and Procedures (CMP) Supplement, D044W045, contains CMP requirements, service bulletin data, configuration data effectivity matrices to assist the operator in showing compliance with FAA Special Condition Number 25-ANM-84 for 180 minute ETOPS operations. This document provides the information and references required to understand interim actions or closure items defined by the ETOPS CMP requirements.

In November 2000 the regulatory requirements governing ETOPS missions, or Configuration, Maintenance, and Procedures (CMP) were documented in a new document D440W054. This contains all CMP requirements for current airplane/engine combinations certified to date, plus the requirements to operate 207 minute ETOPS. The CMP supplement (D044W045) continues to serve as an aid to the operators in showing compliance with the regulatory requirements.

Prior to ETOPS operations, all of the above documents should be reviewed to ensure compliance with CMP requirements. Per the FAA RAB FRR, Appendix 1, and FAA approval letters, operators must implement each item shown in the CMP Supplement section applicable to their engines/airplane configurations.

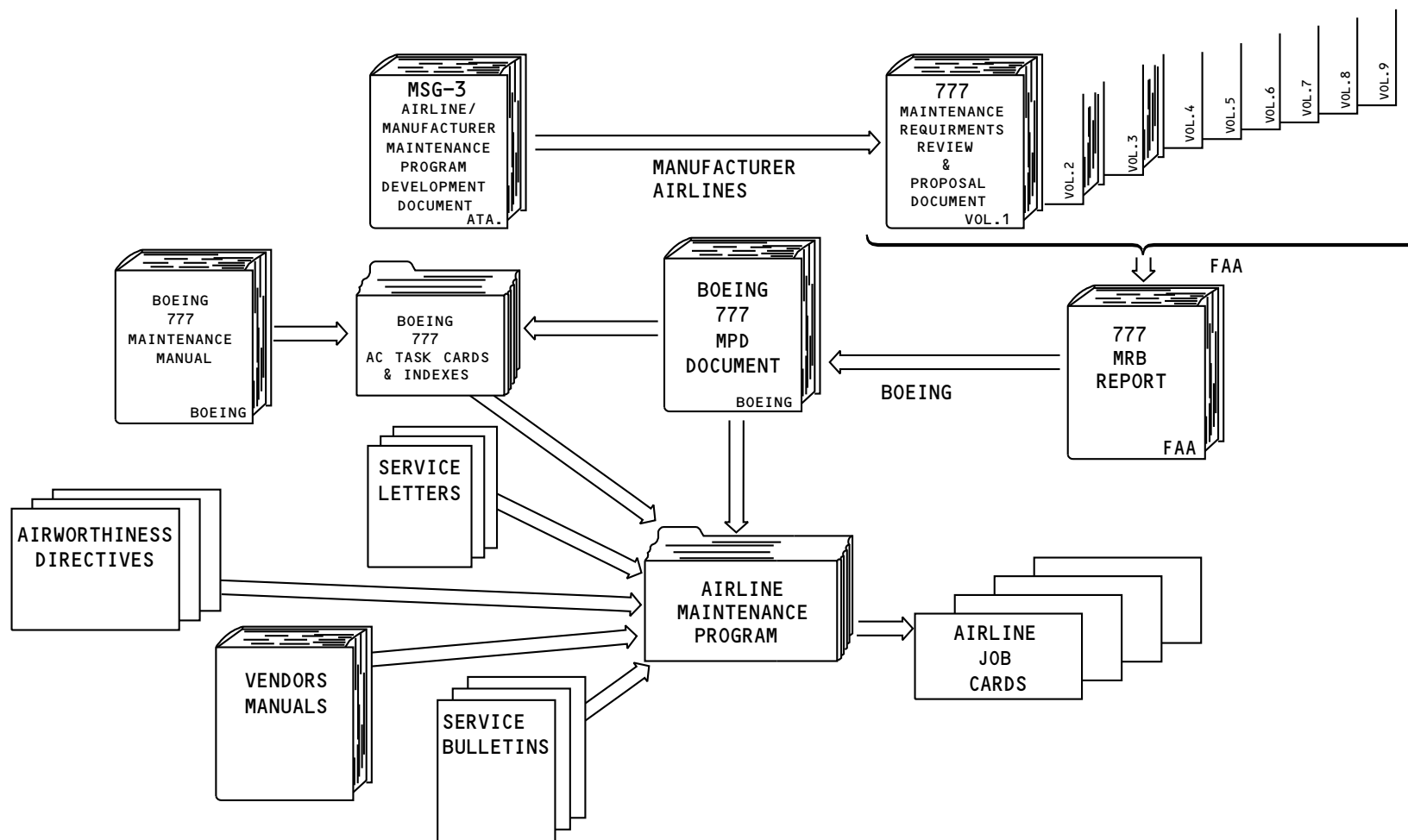
### **B. SCHEDULED MAINTENANCE PROGRAM DEVELOPMENT**

Most of the scheduled maintenance tasks outlined in this planning document were developed using the process guidelines of the ATA Airline/Manufacturer Maintenance Program Planning Document (MSG-3). In addition this document includes all scheduled maintenance tasks recommended by Boeing based on world wide fleet experience, (with the exception of temporary requirements as described in paragraph A). There are no additional Boeing recommended scheduled maintenance tasks.

Some Structural inspection requirements arose from the Model 777 airplane certification activities with the U.S. Federal Aviation Administration (FAA) and are identified as "Airworthiness Limitations" in Section 9 of this document.

A few maintenance requirements were developed as a result of the safety analysis for certification of the airplane. These tasks, called "Certification Maintenance Requirements" (CMR's), are listed in the systems section ; however, Section 9 (Airworthiness Limitations and Certification Maintenance Requirements) is the approved document for all CMR's. Section 9 is controlled separately from the rest of the MPD and is approved by the FAA Aircraft Certification Office and is released as document number D622W001-9.

Figure 1-1 illustrates the process used to develop the 777 scheduled maintenance program, eventually leading to the preparation of the individual airline job cards.



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**Figure 1 777 MAINTENANCE PROGRAM DEVELOPMENT**

**C. MAINTENANCE CHECKS**

Many of the scheduled maintenance tasks listed in this document identify the frequency of accomplishment in terms of a usage parameter and frequency.

Transit and Service checks may be augmented at the discretion of the operator.

The Transit Check is intended to assure continuous serviceability of a transiting aircraft. This check is planned for use at an enroute stop and is basically a "walk-around" inspection which requires a check of the aircraft interior and exterior for obvious damage, leaks, proper operating equipment, security of attachment and required servicing.

Operators deviating substantially from a normal type of utilization (those accumulating less than 100 flight hours/month/airplane (1200 hours/year)), should consider the application and employment of a Low Utilization Maintenance Program based on calendar time.

Task intervals are expressed in flight hours, cycles, or calendar time. Individual operators may convert intervals (based on airplane utilization) to their desired units provided such conversion does not result in exceeding the frequencies identified herein. An operator may package any or all of the tasks into their own check intervals provided such packaging does not exceed the interval shown for the task. Adjustments for training flights can be made by considering a full stop landing or two touch-and-go landings equivalent to one full flight cycle each.

All intervals are whichever comes first unless otherwise stated.

**D. MAINTENANCE TASK INTERVAL ESCALATION**

The Task intervals specified in this document may be escalated (increased) in keeping with the operator's existing regulations and practices. It is the operator's responsibility to justify an escalation of task intervals and other time limitations to their regulatory authority based on substantiating operating experience. When task intervals are to be escalated, the operator should carefully evaluate all items subject to escalation to ensure that only qualified items are included in the escalated interval and that AWL, CMR and SCI task interval remain unchanged. Systems tasks intervals sensitive to the escalation are identified by a Special Note, refer to the MRBR (Report No. D622W001) Appendix O for task escalation information.

The task intervals specified in this document (excluding flight cycle limits of Section 2, Structures) may be escalated (increased) in keeping with the operator's existing regulations and practices. It is the operator's responsibility to justify an escalation of task intervals and other time limitations to their regulatory authority based on substantiating operating experience. When task intervals are to be escalated, the operator should carefully evaluate all items subject to escalation to ensure that only qualified items are included in the escalation process and that AWL, CMR and SCI task intervals remain unchanged. Structures (Section 2) task flight cycle limits shall not be escalated (increased) due to fatigue damage inspection requirements developed for type certification.

**EXCEPTIONAL SHORT-TERM EXTENSIONS (STEs)**

The term "exceptional short-term extension" is defined as an increase in a task interval that may be needed to cover an uncontrollable or unexpected situation and should not be confused with the interval escalation process detailed in the previous paragraph. Operators have procedures for performing exceptional short-term extensions that are approved by their regulatory agency in their General Engineering Maintenance Manual (GEMM) and any limits specified in this MPD for STE do not override the operator/local regulatory approved processes in the operator's GEMM. Maximum short-term escalation intervals may be a percentage of an existing time interval for a particular task or designated in hours of time in service, cycles, or some other identifiable increment. Except under certain conditions, the maximum time allowable for a short-term escalation is 10 percent (not to exceed 500 hours/cycles) time in service. Maintenance tasks or checks controlled by calendar-days or years would also have a limit of 10 percent, not to exceed the amount of days it would take the aircraft to reach the 500-hour time in service limit. For example, if a certificate holder's use is 10 hours a day, the maximum time allowable for short-term escalation of a particular calendar task is 10 percent, but may not exceed 50 days (500 hours ÷ 10 hours a day = 50 days). For items controlled by more than one limit, e.g., flying hours and calendar time, the more restrictive limit shall be applied.



After a task has experienced an exceptional short-term extension, the task interval will revert back to its interval listed in this document (or approved increased interval of an operator evolved task).

Repeated use of extensions, either on the same airplane or on similar airplanes in an operator's fleet, should not be used as a substitute for good management practices. Short-term extensions must not be used for fleet task escalations. Short-term extensions will not be cumulative.

The local regulatory authority (e.g., a Principal Maintenance Inspector) should concur with any exceptional short-term extensions before they take place using procedures established with the local regulatory authority in the operators' manuals. For guidance on this subject see US FAA Flight Standards Information Management System (FSIMS) 8900.1, Vol 3, Ch 37, Sec 1.

Exceptional short-term extensions referenced in this section do not apply to limits of Airworthiness Limitations (AWLs/ALIs), Special Compliance Items (SCIs), Certification Maintenance Requirements (CMRs), Safe Life Limits referenced in the Airplane or Engine Type Certificate Data Sheet, U.S. Title 14 CFR 91 requirements, or applicable Airworthiness Directives.

For the approved exceptional short-term extensions guidelines of the airworthiness limitations and certification maintenance requirements, refer to the MPD, Section 9. Systems tasks identified by the special note as sensitive to the escalations can utilize the same approved exceptional short-term extensions as CMRs.

### **E. WARRANTY (VENDOR ITEMS)**

The accomplishment, at specified intervals, of maintenance tasks as recommended in this document, does not imply a warranty by The Boeing Company for service life of vendor components. If an operator is concerned with a specific warranty for a vendor item, the vendor should be contacted regarding warranty policy, overhaul times, and service information.

### **F. AUTOMATED CONFIGURED (AC) TASK CARDS**

For most of the maintenance tasks listed in this 777 MPD Document, a corresponding Boeing 777 Maintenance Task Card has been prepared.

"Automated Configured (AC)" is defined as follows:

- **AUTOMATED**

The task cards are automated in that all text and illustrations are computerized and, once properly identified, are automatically merged onto the task card. The applicable procedures and illustrations from the Maintenance Manual are automatically incorporated on the task cards and any revision to the Maintenance Manual automatically triggers the task card revision as applicable.

- **CONFIGURED**

The task cards are configured to the same degree that the Boeing Maintenance Manual is configured for each operator. They include the text and illustrations pulled from the operator's configured Maintenance Manual. They cover all requirements of the Boeing recommended scheduled maintenance program outlined in this MPD and are printed in a Boeing standard format. Further customization of the cards is possible based on negotiation between the operator and Boeing.

### **G. REVISIONS**

The MPD and task cards are revised on the same 120 day cycle as the 777 Maintenance Manual. Both the MPD and the task cards are derived from the same computerized data base.

Revision bars on the data pages are computer generated and are marked to the left of the first line only of the affected task. This bar indicates that something within the entire task has changed since the last MPD revision.



## 777-200/300 MAINTENANCE PLANNING DOCUMENT

Changes are indicated on the List of Effective Pages (LEP). The pages which are revised will be identified on the LEP by an R (Revised), A (Added), O (Overflow, i.e. changes to the document structure and/or page layout), or D (Deleted). Each page in the LEP is identified by section title, page number and page date.

Pages replaced or made obsolete by this revision should be removed and destroyed.

The "Highlights" pages which accompany each revision are a summary of the significant changes included in that revision, and are a useful reference.

Please submit any comments or recommendations concerning this document to:

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### **H. PERIODIC AIRPLANE WEIGHING**

The Boeing 777 Weight and Balance Manual prepared for each operator describes the recommended procedures for preparation and weighing of the model 777 airplane. Useful information concerning periodic weighing is described in FAA Advisory Circular (AC) 120-27 which provides a method and procedures for an operator to develop a weight and balance control system.

### **I. CHECKS AND INTERVALS**

All intervals are whichever comes first unless otherwise stated.