Systems Introduction

AMP Reference: IAL/777/T Revision 00 Initial

SCOPE

This section of the MPD outlines the scheduled maintenance tasks for the Systems Maintenance Program. This section, arranged in ATA order, may cover the following aircraft systems:

12 Servicing	32 Landing Gear (Mechanical)	56 Windows
20 Standard Practices	33 Lights	57 Wings
21 Air Conditioning	34 Navigation	70 Standard Practices - Engine
22 Auto Flight	35 Oxygen	71 Powerplant
23 Communications	36 Pneumatic	72 Engine
24 Electrical Power	38 Water & Waste	73 Engine Fuel and Control
25 Equipment & Furnishings	47 Inert Gas System	74 Ignition
26 Fire Protection	49 Airborne Auxiliary Power Unit (APU)	75 Air
27 Flight Controls	51 Standard Practices & Structures	76 Engine Controls
28 Fuel	52 Doors (Mechanical)	77 Engine Indicating
29 Hydraulic Power	53 Fuselage Drains	78 Exhaust
30 Ice & Rain Protection	54 Nacelles/Pylons	79 Oil
31 Indicating & Recording System	55 Stabilizers	80 Starting

GENERAL NOTES

1. The terms "check" and "inspection" are not intended to imply a level of skill required to accomplish a task.

2. The phrase "... mechanical control path ..." is used in describing certain scheduled maintenance tasks. This is not intended to include cables, but only components/assemblies required to initiate and terminate action.

3. The intent of certain Systems general visual inspection tasks, developed under the MSG-3 process, is satisfied by the Zonal Inspection Program. These Systems

tasks so precluded, are not listed in this section so as not to be redundant with the Zonal Inspection Program. They are, however, listed in Appendix G for reference.

4. 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. Clean-up of these materials should be a standard part of maintenance activity. (Reference Service Letter 777-SL-25-018).

5. Certain 777 MRB Report tasks are accomplished by MPD items in different ATA's than the original MRB item. (See ATA 12 & 20).

6. Certification Maintenance Requirement - CMR. Maintenance requirements arising from aircraft certification activities are described in FAR 25.1309 and AC 25.1309-1. Independent of the MSG-3 analysis process, CMR's are developed as part of the aircraft systems safety analyses required for aircraft certification. CMR tasks are identified when system probabilities and failure effects are not expected to be within an acceptable range without a periodic maintenance requirement.

There are two categories of CMR's. The first are those tasks associated with items critical to safety of flight; these "critical" systems must have an expected probability of failure within the "extremely improbable" range. The second category of CMR's are those tasks associated with items essential to safety of flight; these "essential" systems must have an expected probability of failure within the "improbable" range. All CMR tasks including CMR task frequencies are included in Section 9 "Airworthiness Limitations (AWL's) and Certification Maintenance Requirements (CMR's)". Section 9 is controlled separately from the rest of the MPD, is approved by FAA Engineering Part 25, and is released under a separate document number (D622W001-9).

7. Fuel System Maintenance - Fuel tank sumping intervals should be determined by operators and based upon their operating environment, fuel management resources and in-service experience. Fuel sampling checks for microbial contamination task intervals should be based on the airplane operating environment, fuel source reliability, and operator in-service experience with incidents of fuel tank microbial growth and/or resulting tank structural corrosion. Each operator should assess their fleet for the possibility of microbial

growth corrosion and then plan and perform preventative maintenance to avoid costly corrosion damage.

8. Electrical Wiring Interconnection System (EWIS):

This section contains general visual inspections, detailed inspections, and restoration (cleaning) tasks that comply with Title 14, Code of Federal Regulations (CFR) 26.11(b), titled "Electrical Wiring Interconnection Systems (EWIS) Maintenance Program". These requirements were created using the "Enhanced Zonal Analysis Procedure" (EZAP) with guidance from Advisory Circular AC 25-27.

All EZAP requirements in this section are contained in ATA 20, (Standard Practices), and ATA 28, (Fuel). They are identified with the term "(EZAP)" in the task description. Additional EZAP requirements are also included in Section 3, Zonal Inspection Program.

Refer to Section 3, Zonal Inspection Program for additional information.

NOTES: ATA 49 (APU)

1. Off-aircraft tasks not specified herein shall be controlled by individual operators based on their specific maintenance programs and approved manuals.

2. Identification of life-limited parts is controlled by the APU manufacturer and is provided in the GTCP 331 Engine Inspection/Repair Manual (Garrett Manual 49-23-49).

3. The tasks listed are to be accomplished at the specified intervals. The most appropriate task interval (frequency and usage parameter) has been used in determining the APU scheduled maintenance task requirements. Operators may develop conversion factors (i.e., APU hour to flight hours) with the approval of their regulating authorities for incorporation into their own scheduled maintenance program, provided such conversion does not exceed the interval shown for the tasks.

4. Mandatory threshold inspections are not required for the GTCP 331 auxiliary power unit. The manufacturer may recommend such inspections in the event that late development or in-service experience would dictate the need to examine specific components of the APU; if this is necessary, direct negotiations between applicable operators and the APU manufacturer will be necessary. Results of these inspections should be made available by the APU manufacturer to other customer airlines as well as the regulatory authorities.

5. Opportunity inspections may be used for sampling certain components and accessories defined by the APU manufacturer's approved maintenance manual and/or service bulletin. Opportunity inspections for other APU components or accessories may be recommended, and if required, the operators will be requested by the APU manufacturer to cooperate in obtaining necessary samples on an "as required" basis. Results of these inspections should be made available by the APU manufacturer to other customer airlines as well as the regulatory authorities.

NOTES: ATA 71-80 (POWERPLANT)

1. With the exception of life-limited parts, off-wing (in-shop) maintenance tasks are not included herein. Off-wing tasks shall be controlled by individual operators based on their specific maintenance programs and approved manuals.

2. Limitations of life-limited parts are controlled by the engine manufacturers and are published in the General Electric GE90, Pratt &Whitney PW4000, and Rolls-Royce Trent 800 Engine Manuals, Section 5. The declared life of these life-limited parts will be lower than the ultimate Predicted Safe Cycle Life (PSCL). A life sampling program to justify an extension to the declared life up to the PSCL in increments, will be an approved method of achieving life extensions.

3. General Visual Definition:

A check of a specific detail, assembly or installation that will detect obvious unsatisfactory conditions/discrepancies in externally visible hardware/structure. This is a search for evidence of irregularity and shall be guided by the appropriate section of an approved Maintenance Manual. It may include internal structure/hardware which is visible through quick opening access panels/doors. Work stands, ladders, etc., may be required to gain proximity.

4. There are no mandatory Threshold Inspections required. Engine manufacturers may recommend such inspections in the event that in-service experience would dictate the need to examine specific components of individual engines; if this is required, direct negotiations between applicable operators and the engine manufacturers will be necessary. Results of these inspections should be made available by the engine manufacturers to other customer airlines as well as the regulatory authorities.

5. Opportunity Inspections of certain engine components and accessories may be recommended. No specific list of items will be included; however, if the need exists, operators will be requested by the engine manufacturers to cooperate in obtaining necessary samples on an "as required" basis. Results of these inspections should be made available by the engine manufacturers to other customer airlines as well as the regulatory authorities.

LIGHTNING/HIGH INTENSITY RADIATED FIELDS (LHIRF) PROGRAM RULES

The Lightning/HIRF (L/HIRF) maintenance program provides maintenance requirements to ensure the continued airworthiness of the installed systems.

Lightning/HIRF protection systems include design features that protect against the adverse effects of Lightning/HIRF. The scheduled maintenance tasks included in the Systems section of the MPD result from MSG-3 analysis using a methodology approved by the regulatory authorities and included in the 777 Policy and Procedures Handbook (PPH).

MSG-3 analysis of L/HIRF protection systems includes structural shielding, wire shields, connectors, and equipment protection components. This includes MSG-3 analysis of protection associated with the L/HIRF critical and essential systems list (Document TBD, titled "777 HIRF/Lightning Protection Equipment Criticality List").

The Lightning/HIRF scheduled maintenance tasks and intervals included in this section have no Failure Effect Category (FEC).

1. Zonal Inspection Program Applicability

Zonal inspection tasks are effective for detecting accidental damage and environmental deterioration to the Lightning/HIRF protection. General Visual Inspections of systems whose failure may result in a catastrophic condition are identified as stand-alone tasks in the L/HIRF Maintenance Program. General Visual Inspections of systems whose failure may result in a potentially hazardous condition may be transferred to the Zonal Inspection Program.

2. Lightning/HIRF Assurance Plan

The effectivity and applicability of all Lightning/HIRF tasks will be evaluated against the L/HIRF Assurance Plan findings. Boeing engineering document TBD, titled "777 HIRF/Lightning Protection Assurance Plan," explains the details of the assurance plan. This document outlines a plan for assuring the long-term effectiveness of the design features built into the 777 airplane and provides a means to evaluate the applicability and effectivity of the Lightning/HIRF Maintenance Program.

PRESSURE CYLINDER REQUALIFICATION

Periodic requalification of pressure cylinders - individual tasks for periodic requalification of pressurized cylinders by hydrostatic testing are not included herein. High- pressure cylinders are regulated under Title 14 of the Code of Federal Regulations if installed on an aircraft and regulated under Title 29 and 49 CFR when not installed on an aircraft. A cylinder may remain installed past the time when its Title 49 CFR-required requalification is due, provided it is not serviced or has not exceeded the airframe or cylinder manufacturer’s life limit recommendations. For compliance with these rules and regulations, refer to the US FAA Flight Standards Information Management System (FSIMS) 8900.1, Vol 3, Ch 57, Sec 1, or local regulatory authority.

SYSTEMS AND POWERPLANT MAINTENANCE PROGRAM

MPD ITEM NUMBER	AMM REFERENCE	CAT	TASK	INTERVAL		ZONE	ACCESS	APPLICABILITY		MAN-HOURS	TASK DESCRIPTION
				THRESHOLD	REPEAT			APL	ENG		
XX-XXX-XX											AIRPLANE MAINTENANCE MANUAL PROCEDURE (CHAPTER, SECTION, SUBJECT) WHICH SUPPORTS THE MPD REQUIREMENT.
											MPD Sequence number
											MPD Sequence number
											First two digits = ATA Chapter
EXAMPLE ILLUSTRATING FORMAT											
21-065-00		9	DET	6000 FH	6000 FH	244		ALL NOTE	ALL	1.00	INSPECT (DETAILED) E13 RACK SATCOM BACKUP FAN CHECK VALVES FOR FREEDOM OF MOVEMENT, WEAR, CONDITION AND SECURITY. AIRPLANE NOTE: Applicable to airplanes with SATCOM installed on E11 rack.

Figure 1-1 SYSTEMS AND POWERPLANT MAINTENANCE PROGRAM EXAMPLE PAGE

PAGE FORMAT EXPLANATION

1. MPD ITEM NUMBER

Each task is given a unique MPD item number. The first and second digit is the ATA number. The rest of the numbers denote the MPD sequence number.

2. AMM REFERENCE

AMM Reference provides chapter, section, subject and page block location of the appropriate AMM procedure to accomplish the task requirement. AMM Reference does not reflect the entire AMM task number due to differences in configurations. Not all references may be applicable to an individual operator.

3. CAT FAILURE-EFFECT CATEGORIES (CAT) & REGULATORY REQUIREMENTS

All tasks listed in this section have a "category" identification as follows:

- 5 - Evident, Safety
- 6 - Evident, Economic (Operational)
- 7 - Evident, Economic (Non-Operational)
- 8 - Hidden, Safety
- 9 - Hidden, Non-Safety
- Blank (No category) - LHIRF and EZAP (ATA 20) tasks do not have a Failure Effect Category

4. TASK MSG-3 TASK CATEGORIES

LUB = LUBRICATION - Consumable replenishment by lubricating.

SVC = SERVICING - Consumable replenishment by servicing.

OPC = OPERATIONAL CHECK - A failure finding task to determine if an item is fulfilling its intended purposes. Does not require quantitative tolerances.

VCK = VISUAL CHECK - A visual failure finding task through observation to determine if an item is fulfilling its intended purpose. Does not require quantitative tolerances.

GVI = INSPECTION - GENERAL VISUAL - A visual examination that will detect obvious unsatisfactory conditions

FNC = FUNCTIONAL CHECK - A quantitative check to determine if one or more functions of an item performs within specified limits. This is a potential failure finding task.

DET = INSPECTION - DETAILED - An intensive visual examination of a specified detail, assembly, or installation. A potential failure finding task.

SDI = INSPECTION - SPECIAL DETAILED - An intensive examination of a specific item, installation, or assembly to detect damage, failure, or irregularity.

RST = RESTORATION - Reworking, replacement of parts or cleaning necessary to return an item to a specific standard.

DIS = DISCARD - The removal from service of an item at a specified life limit.

INTERVAL

Task intervals are specified in terms of a frequency and usage parameter such as flight hours, cycles, and calendar time. Letter checks are not used.

DY = Days

FC = Airplane Flight Cycles

APU CNG = APU Change

FH = Airplane Flight Hours

AH = APU Hours

YRS = Years

IDG CNG = Integrated Drive Generator Change

ENG CNG = Engine Change

LDG CNG = Landing Gear Change

LIF LIM = Life Limited

NAT REQ = Regulatory Authority Requirement

SHP VST = Shop Visit

VEN REC = Vendor Recommendation

NOTE = Interval note

Task intervals followed by a fraction indicates the required fraction of the operator's fleet to be inspected.

Example: "24000 HRS 10%" requires 10% of the operator's fleet to be inspected at each 24000 HR interval. Ideally, the oldest airplanes in the operator's fleet should be used for the sample. Additionally, the inspections should be staggered to different airplanes to maximize the inspection coverage across the fleet.

ZONE

The Zone identifies where the task is performed on the airplane. Zones are defined in Section 3, "Zone/Station Diagrams."

ACCESS

The access panels or door numbers required to be opened when performing the task. Refer to AMM 20–10–12 for removal of any vinyl decal, markers or appliques which inhibits access to the periphery, fasteners, or any other feature (e.g. latches) of the access panel or door which is required to be opened.

APPLICABILITY

Airplane (APL) Model:

- ALL = All 777 Airplanes
- 200ER = 777-200ER
- 200 = 777-200
- 300 = 777-300
- 200LR = 777-200LR
- 300ER = 777-300ER
- 777F = 777 Freighter
- NOTE= Airplane Applicability Note

Engine (ENG):

- ALL = All 777 Engines
- GE90 = 75B, 76B, 85B, 90B, 94B
- GE100 = GE90-110, GE90-115B
- 4000 = PW4074, PW4077, PW4084, PW4090
- TRENT 800 = RB211 Trent 875-17, 877-17, 884-17, 892-17, 892B-17, 895
- NOTE = Engine Applicability Note

LABOR-HOURS

Estimated Labor-hours (per airplane) required to perform the task(s). These labor-hours do not include the time required to gain access, position work stands, defuel and purge fuel tanks, troubleshoot, nor correct discrepancies found while performing the task. The labor-hours estimates are based on the use of skilled personnel and ready availability of required tools and equipment.

TASK DESCRIPTION

Description of the task to be performed. Applicability / Interval notes are listed following the task description to provide additional explanation for the columns where "NOTE" appears.