Zonal Introduction

AMP Reference: IAL/777/T Revision 00 Initial

SCOPE

The Zonal Inspection Program includes a general visual and, if required, physical check of the general condition and security of attachment of the accessible systems

and structures items contained in defined zones. This includes checks for degradation such as chafing of tubing, loose duct supports, damage to Electrical Wiring Interconnection System (EWIS), cable and pulley wear, fluid leaks, electrical bonding, general condition of fasteners, cracked, chipped, or missing paint on composite structure, inadequate drainage, etc., and general corrosion, not covered in the MSG-3 analysis. The zonal inspection is not intended as a quality assurance after maintenance check for determining proper reassembly of systems, components, structures, or powerplants.

The Zonal program packages a number of General Visual (GV) Inspections into one or more zonal inspections. The program includes any General Visual Inspection

tasks required to assure security of attachment and general condition of any system or structural items within the zone.

B. NOTES

1. PURPOSE

The Zonal Inspection Program serves two primary purposes:

A. To assess the general condition and security of attachment of all systems and structures items contained in each zone by use of adequate zonal inspection tasks.

B. To package a number of General Visual Inspection tasks generated against Maintenance Significant Items (MSIs) and Structures Significant Items (SSIs) into

one or more Zonal tasks.

C. ZONAL PROGRAM RULES

1. The Zonal Inspection Program contains a series of tasks identified as Inspection-Zonal. This inspection is defined as:

"A visual examination of an interior or exterior area, installation or assembly to detect obvious damage, failure or irregularity. This level of inspection is made from within touching distance, unless otherwise specified. A mirror may be necessary to enhance visual access to all exposed surfaces in the inspection area. This level of inspection is made under normally available lighting conditions such as daylight, hangar lighting, flashlight or drop-light and may require removal or opening of access panels or doors. Stands, ladders or platforms may be required to gain proximity to the area being checked".

Adequate lighting and normal inspection aids are to be used as required, such as flashlight and/or inspection mirror.

2. Internal/External, as used in the Zonal inspection tasks, refers to the point from which the inspection is accomplished in relation to the zone.

3. The zonal task includes visual checks of all electrical wiring/EWIS, hydraulic tubing, water/waste plumbing, pneumatic ducting, components, and fittings, brackets, etc., associated with systems as well as all visible structure which are contained within the zone boundaries. The extent of the intended area of the inspection is defined by the access, if any, listed with each inspection item.

4. Whenever physically possible, the zonal inspections will be conducted within touching distance unless otherwise stated.

5. General Visual Inspections included in for the zonal program are GV inspections that will detect obvious unsatisfactory conditions, damage, failures, irregularities / discrepancies in visible structure, systems and powerplant installations or assemblies. Inspection/checks other than "General Visual" are not included in the zonal program and are listed as separate tasks in the respective Systems, Powerplant or Structures Programs sections.

6. Detailed and Special Detailed Inspections are not contained in the Zonal Inspection Program.

7. Zones which contain systems/components/installations are assigned a zonal inspection task to be performed at specified intervals.

8. Many systems, powerplant and structures General Visual Inspection tasks have been satisfied (precluded) by zonal inspections required under the Zonal Inspection Program. - These tasks are listed in an Appendix of this report.

9. Based on the operator's access panel configuration, experience and scheduling requirements, the access requirements may be amended by the operator.

10. 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).

11. The scope and intent of what is to be inspected is based on what is visible within the zone with the specified access open. Any fairings, panels, or other items which are specified to be opened to gain access to a particular zone should also be inspected if they are not covered by a separately defined zonal task.

12. Design features for HIRF relative to GV Inspections were considered during the zonal program analysis.

13. For the 777-300ER airplane, those zones that were new or significantly modified from the 777-300 were analysed using MSG-3 Rev. 2002 logic.

14. For the 777F airplane, those zones that were new or significantly modified from the 777-200LR were analysed using MSG-3 Rev. 2007 logic.

15. Many systems, powerplant and structures General Visual Inspection tasks have been satisfied (precluded) by zonal inspections required under the Zonal Inspection Program. These tasks are listed in Appendix G of this report.

Escalation of the initial inspection flight cycle intervals requirement may affect some fatigue-related items and/or cause additional requirements to satisfy the required DTR. Therefore, when each airplane reaches the threshold per Section 9 for the fatigue related inspections, the task intervals for items in Section 3 must be reduced back to the initial MPD intervals shown.

Additionally, the ISC has escalated the flight cycle parameter of the interval of some tasks, based on operator service data. These items must also be returned to the original interval used at the time of certification. Appendix L contains the list of these tasks, and the interval that must be used for these tasks upon reaching the defined supplemental fatigue inspection threshold in order to be in compliance with the damage tolerance certification requirements.

16. The Zonal Inspection Requirements and related Corrosion Prevention and Control Program (CPCP) Requirements are combined in this section. Refer to Paragraph E of Section 2 for additional details and reporting requirements. For information purposes, those Zonal Tasks precluding CPCP requirements include a NOTE in the

task description to read:.

“CPCP NOTE: Corrosion Prevention and Control Basic Task Required.”

Other zonal inspections, not currently identified with Structure or Corrosion Inspection Tasks, may be merged with the appropriate structural inspection if desired by the operator.

17. The 777 Maintenance Program includes task requirements that comply with Title 14, Code of Federal Regulations (CFR) 26.11(b), titled "Electrical Wiring Interconnection Systems (EWIS) Maintenance Program". This rule requires the development of maintenance and inspection tasks, intervals, and procedures for the airplane's Electrical Wiring Interconnection System (EWIS).

To comply with 14 CFR 26.11(b), an analysis was conducted for each maintenance zone using an "Enhanced Zonal Analysis Procedure" (EZAP) with guidance from Advisory Circular AC 25-27. The objective of the EZAP analysis was to identify maintenance and inspection tasks to: 1) minimize the accumulation of combustible materials; 2) detect EWIS component defects; 3) detect EWIS installation discrepancies that may not be reliably detected by inspections contained in existing maintenance programs.

The term "EWIS" is defined in the 777 Maintenance Review Board Report (MRBR), D622W001-MRBR, Appendix D - Definitions. This appendix includes definitions of other terms related to EZAP tasks such as: "Power Feeder Wiring" and "Combustible Materials". For all other definitions related to EZAP, refer to AC 25-27.

The following task types were created from the EZAP analysis: standard zonal general visual (GV) inspections, stand-alone general visual inspections (GVI), detailed inspections (DET), and restoration/cleaning (RST) tasks.

Zonal tasks that satisfy EZAP zonal GV inspection requirements are contained in this section. Additional EZAP requirements consisting of stand-alone GVI, DET, and RST tasks are contained in Section 1, System Maintenance Program.

All Electrical Wiring Interconnection System (EWIS) requirements approved from the Enhanced Zonal Analysis Procedure (EZAP) are identified with the term "(EZAP)" following the task description. These EZAP tasks are not system specific and do not have a failure effect category.

Some maintenance zones may have multiple EZAP inspection and maintenance requirements. For example, a particular maintenance zone may include an EZAP requirement to perform a standard zonal GV inspection, and a separate stand-alone GVI or detailed inspection of EWIS. In addition to these inspections, the zone may also include an EZAP requirement to perform a restoration (cleaning) task to remove combustible materials.

Standard zonal tasks in this section that are identified as EZAP requirements may include an "Interval Note". The Interval Note documents the interval that was created by the EZAP analysis for a zonal inspection of the EWIS. This is intended as reference information to support future interval optimization considerations.

This note is not applicable to EZAP tasks listed in Section 1, System Maintenance Program. For example, an existing standard zonal task may have an initial and repeat inspection interval of 16000 FC/3000 DY. The EZAP analysis may have created a requirement to inspect the EWIS in this zone using a standard zonal GV with an interval of 24000 FC/4500 DY. In this case, the standard zonal task would have an Interval Note that states, "The EZAP inspection requirement with interval 24000 FC/4500 DY is satisfied by this zonal inspection".

18. Zonal inspections of the empennage (ATA 55) may be inhibited by external vinyl decals, markers or appliques. Where tasks require inspection of underlying structure, external decals shall be removed for access. Affected tasks are identified under the task specific ACCESS NOTE.

ZONAL INSPECTION PROGRAM

MPD NUMBER	AMM REFERENCE	ZONE	ACCESS	INTERVAL		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
									EXAMPLE ILLUSTRATING FORMAT
53-806-00		112	112AL	4000 FC 750 DY NOTE	4000 FC 750 DY NOTE	ALL	ALL	0.70	INTERNAL-ZONAL (GV): AREA FORWARD OF NOSE LANDING GEAR WHEEL WELL Perform an Internal Zonal Inspection (GV) of the Area Forward of the NoseLanding Gear Wheel Well. INTERVAL NOTE: Whichever comes first

Figure 3-1 Zonal Maintenance Requirements Example Page

D. TASK SUMMARY PAGE FORMAT

1. MPD NUMBER

Each task is given a unique MPD number. The first and second digit is the ATA number. The third, fourth, fifth sixth and seventh digits denote the MPD sequence number.

2. AMM REFERENCE

Airplane Maintenance Manual procedure (Chapter, Section, Subject) which supports the MPD requirement.

3. ZONE

The Zone identifies where the task is performed on the airplane.

4. ACCESS

The access panels or door numbers required to be opened when performing the task.

5. INTERVAL

Task intervals are expressed in terms of a frequency and usage parameter such as flight hours, calendar time and cycles.

- FC = Airplane Flight Cycles
- FH = Airplane Flight Hours
- DY = Days
- APU CNG = APU Change
- LIF LIM = Life Limited

• NAT REQ = Regulatory Authority Requirement

6. APPLICABILITY

Applicable Airplane Model and Engine. "NOTE" refers to an explanation under the task description.

Airplane (APL) Model:

• ALL = All Airplanes

• 200 = 777-200

• 200ER = 777-200ER

• 300 = 777-300

• 200LR = 777-200LR

• 300ER = 777-300ER

• 777F = 777 Freighter

• NOTE = Airplane Applicability Note

Engine (ENG):

• ALL = All Engines

• GE90 = 7513, 76B, 85B, 90B, 94B

• GE100 = GE90-110, GE90-115B

• 4000 = PW4074, PW4077, PW4084, PW4090

• TRENT = 875-17, 877-17, 884-17, 892-17, 892B-17, 895

• NOTE = Engine Applicability Note

7. MANHOURS

Estimated labour hours (per airplane) required to perform the task(s). These labour 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 labour hours estimates are based on the use of skilled personnel and ready availability of required tools and equipment.

8. TASK DESCRIPTION

Description of the task to be performed. Applicability, Access and Interval notes are listed here to provide additional explanation for the other columns where "NOTE" is used.