Subject Name: MAINTENANCE, OVERHAUL &

REPAIR OF AIRCRAFT SYSTEMS

Subject Code: 15AE664

MODULE 2: *DOCUMENTATION FOR MAINTENANCE*

CHAPTER OUTLINE

- *Manufacturers documentation*
- *Airplane maintenance manual*
- *Fault Isolation Manual (FIM)*
- *Illustrated parts catalogue*
- *Wiring diagram manual*
- *Master minimum equipment*
- *FAR, Advisory circulars*
- *Airworthiness directions ATA document standards*
- *Technical policies and procedure manuals(TPPM)*

Documentation For Maintenance

- Types of Documentation

- It has been said that the paper documentation required for the maintenance of a modern jet liner would weigh about the same as the airplane itself !
- Whether or not this is true, there is certainly a considerable amount of documentation.
- This section will look at three main types of documentation –

1. Manufacturer's Documentation
2. Regulatory Documentation
3. Airline Generated Documentation

Manufacturer's Documentation

- Here, The manufacturer provides necessary information on safe and proper use of equipment for the better service life .
- Mostly, Operation instructions, installation and assembly instructions, maintenance and repair instructions, illustrated parts catalogue may contain in the document.

Airplane Maintenance Manual (AMM)

- Formal Document will have all details about aircraft maintenance.
- This includes checks of lubricating system, functional checks and servicing of airplane.
- Usually it excludes structural modifications and fiber glass paneling.
- Technician signs off logbook/non-routine work card (NRWC)

Component Maintenance Manual (CMM)

- You can do component maintenance under the aircraft category in two cases.

  i) when the AMM tells you to do so by pointing to a relevant CMM

  ii) when the maintenance of the component does not require the unit itself to be removed from the airframe except for the purpose of improving technical access.

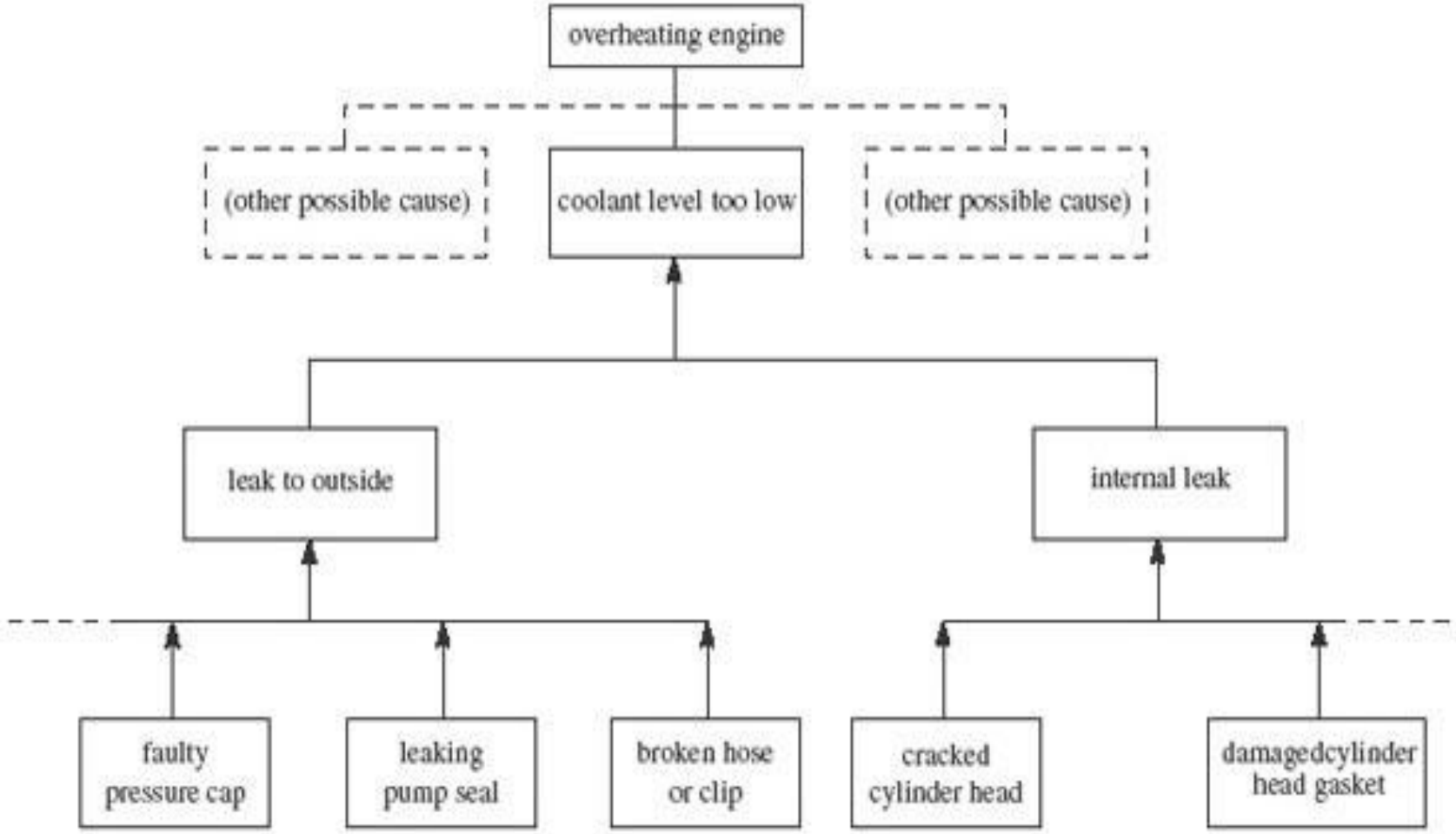
Component Maintenance Manual (CMM)

- It is the document which details the way in which aircraft maintenance tasks on the specified component shall be accomplished.
- The maintenance tasks contained in these manuals do include procedures for restoring a structural component to a serviceable state and reworking and refinishing procedures are often provided in CMM.

Fault Isolation Manual (FIM)

- Set of fault isolation trees
  - Block diagram
  - Troubleshooting
  - Isolate fault
  - Identify/pinpoint problems

Fault Isolation Manual Example



Illustrate Parts Catalog (IPC)

- It will have Parts list/location of all parts.
- It gives the details of
    - Assemblies
    - Subassemblies
    - Alternate part numbers
    - Part inter-changeability
    - Modifications
        - Pre and post modification
- It is used only as supporting reference with the Aircraft maintenance manual

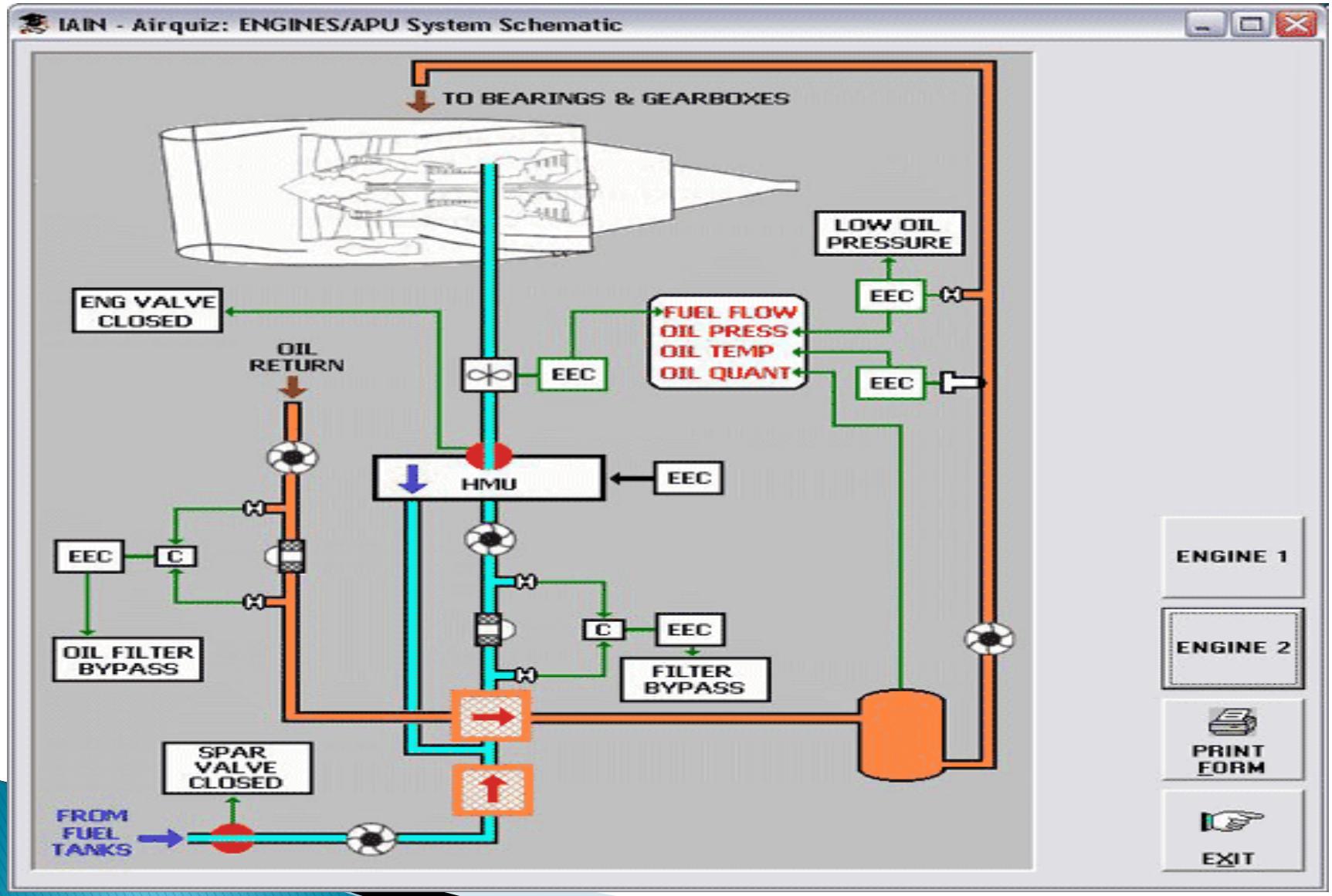
Schematic Diagram Manual (SDM)

- This diagram focuses to show how the system operates.
- It is suitable for learning and teaching and for troubleshooting.
- Schematic Diagram of electrical and hydraulic systems of aircraft contains the detailed information and identifies wiring harnesses, connectors and interfacing equipment.

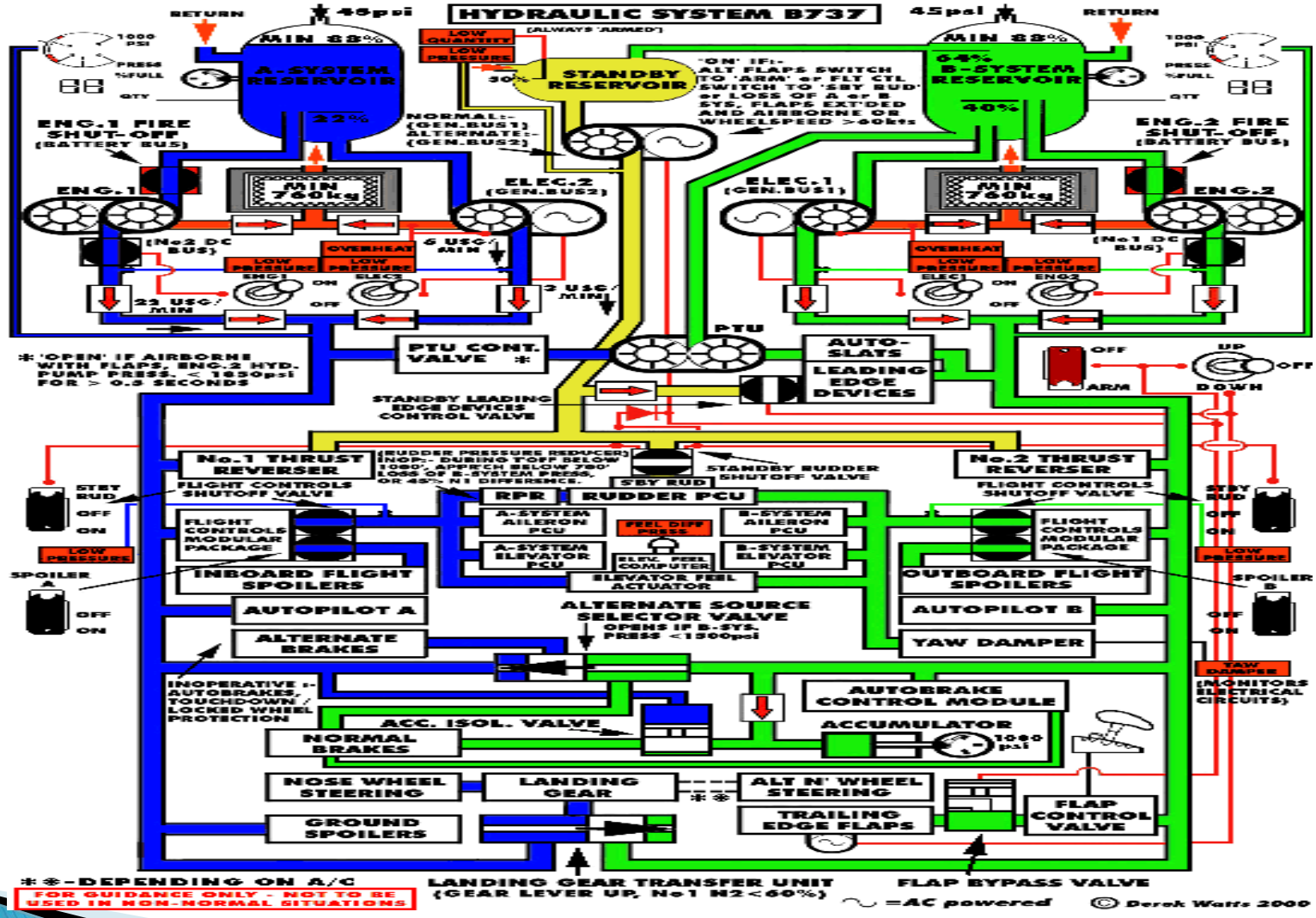
Wiring Diagram Manual (WDM)

- It is Essential for troubleshooting in wiring systems.
- It contains complete run of wiring, including cable bundle numbers and routing, plug and connector numbers and locations and other structural elements through which the wiring is routed.

Example of Schematic Diagram



Wire Diagram Example



Master Minimum Equipment List (MMEL)

- It is identified by the airframe manufacturer and approved by the FAA.
- Identify the equipment which may be degraded or inoperative at dispatch of the aircraft.
- Airline's responsibility to develop their own manual for their specific equipment.

Dispatch Deviation Guide (DDG)

- It is doing maintenance works for the equipments in MMEL before the dispatch of the product.
- It will check
  - Pull/placard circuit breakers
  - Disconnect power
  - Tie up loose cables for removed equipment

Configuration Deviation List (CDL)

- It involves the configuration of the aircraft.
- It identifies any external parts of an aircraft type which may be missing at the commencement of a flight.
- Discovered during line checks/pre-post flights
    - Panels
    - Gear doors
    - Flap hinge fairings
    - Cargo doors

Other Manufacturer Documentation

- Storage and Recovery Document (SRD)
- Structure Repair Manual (SRM)
- Maintenance Planning Data Document (MPD)
- Certification Maintenance Requirements (CMRs)
- Task Cards (TC)
- Service Bulletins
- Service Letter
- Maintenance Tip

Regulatory Documentation

- Federal Aviation Regulations (FAR)
- Advisory Circulars(AC)
- Airworthiness Directive (AD)
- Notice of Proposed Rule Making (NPRM)

Federal Aviation Regulations (FAR)

- These are related to all aspects of aviation including

  * commercial ,private aircrafts
  * airports
  * Navigational Aid
  * ATC
  * Pilot training

Advisory Circulars(AC)

- Issued by FAA
  - Designed to help airline operators meet the FAR requirements
  - suggestions how to comply
  - They define acceptable means, but not the only means, of showing compliance with airworthiness regulations.

Airworthiness Directive (AD)

- The airworthiness directives are very important regulations issued by FAA to correct an unsafe condition that exists in an

  * aircraft
  * aircraft engine
  * Propeller
  * other aircraft appliance

Airworthiness Directive (AD)

Typically an ADs will include-

- A description of the unsafe condition
- The corrective action required
- Date of compliance
- Info on alternative methods of compliance.

Notice of Proposed Rule Making (NPRM)

- This is issued by FAA whenever the FAA intends to change a FAR.
- It is issued in advance of the change to give aviation industry plenty of time to study and comment on the proposed change.

Airline Documentation

- Operations Specification (Ops Spec)
- Technical Policies and Procedures Manual (TPPM)
- Inspection Manual (IM)
- Quality Assurance Manual (QA)

Ops Spec

- Written by the airlines in accordance with strict FAA requirements.
- It details the airline's maintenance, inspection and operations programs.
- This documents can be prepared only by the operators or airliners.

Technical Policies and Procedures Manual (TPPM)

- Primary document for M&E operations manual
- Defines exactly how all M&E functions and activities will be carried out
- Personnel in M&E must be trained on the TPPM

Technical Policies and Procedures Manual (TPPM)

- It Identifies
  - Key personnel
  - Maintenance facilities
  - Describe in detail activities involving
    - Maintenance
    - Inspection
    - Testing

Inspection Manual (IM)

- It is a part of TPPM
  - All inspection activities
    - Mechanic inspection tasks
    - QC inspector tasks
    - Special Inspections (Hard landings , Bird strikes)
    - Airlines required inspection item (RII) Program
    - Paperwork and forms to carry out these functions

Quality Assurance Manual (QA)

- Special manual or part of TPPM
  - It Defines
    - Duties/responsibilities of QA auditors
    - Annual QA processes and procedures
    - Includes formats for Forms and reports to be used

ATA Document Standards

- It is a information standards for aviation maintenance and flight operations.
- These standards provide recommended specifications for the structure.
  - Objective is to:
    - Minimize cost and effort expended by operators
    - Improve information quality
    - Ensure that manufacturers provide data that meets airline operational needs.

ATA Document Standards

- Description and Operation (001 – 099)
  - What system does
  - Various operational modes
  - Detailed description of how it works
- Fault Isolation (101 – 199)
  - Fault trees
  - Specific faults based on flight deck effects
- Maintenance Practices (201 – 299)
  - When 2 or more actions must be used to complete task
  - Followed by test

ATA Document Standards

- Servicing (301 – 399)
  - All servicing tasks
    - Step-by step instructions
    - Required materials
- Removal/Installation (401 – 499)
  - Detailed step-by-step
  - All conditions addressed
- Adjustment/Replacement (501 – 599)
  - Normal maintenance
  - Component replacement

ATA Document Standards

- Inspection/Check (601 – 699)
  - Zonal inspection activities
- Cleaning/painting (701 – 799)
  - Aircraft
    - Washing
    - Cleaning
    - Painting
- Approved repairs (801 – 899)
  - Identifies repairs to
    - Structure and aircraft skin
    - Approved by FAA

THANK YOU