



Global Avionics Training Specialists, LLC.

PRIMUS® 2000/DORNIER 328 JET

INTEGRATED AVIONICS SYSTEM

LINE MAINTENANCE FAMILIARIZATION COURSE SYLLABUS

I. INTRODUCTION

A. SYSTEM DESCRIPTION

The PRIMUS® 2000 Integrated Avionics System is a complete automatic flight control system providing fail-passive execution of flight director guidance, autopilot stabilization, yaw damper and trim functions. The high degree of system integration ensures optimum system performance throughout the aircraft's flight regime. The system displays include Primary Flight Displays (PFD's), Multifunction Displays (MFD's), and Engine Instrumentation Crew Advisory System (EICAS). Radio communication, radio navigation, flight management system and weather radar are also part of the PRIMUS® 2000 Integrated Avionics System. Current optional system features include traffic collision avoidance system, global positioning system, inertial reference system and microwave landing system.

The high level of system integration in the PRIMUS® 2000 system is made possible through the use of the Integrated Avionics Computer (IAC). The IAC employs extensive use of Surface Mount Technology (SMT), Very Large Scale Integrated Circuits (VLSI), and Application Specific Integrated Circuits (ASIC).

The IAC replaces several conventional "Black Boxes" with a single Line Replaceable Unit (LRU), which houses several major avionics subsystems. These subsystems are:

- Automatic Flight Control System Computer
- Electronic Display System Symbol Generator
- Flight Management System Computer
- Fault Warning Computer
- Warning Tone Generator

An essential function of the PRIMUS® 2000 Integrated Avionics System is information interchange between subsystems and/or Line Replaceable Units (LRU's) within a subsystem. Most of the information transfer is accomplished through the use of digital data buses. Some of the data transfer is accomplished in the form of discrete data. The data buses found in the PRIMUS® 2000 Integrated Avionics System include:

- Avionics Standard Communications Bus (ASCB)
- Radio System Bus (RSB)
- Digital Audio Bus
- ARINC 429
- Collins Commercial Standard Digital Bus (CSDB)
- RS-422 Electrical Specification
- RS-232 Electrical Specification

The PRIMUS® 2000 Integrated Avionics System is comprised of the following major subsystems as standard:

- Electronic Display System (EDS)
- Attitude and Heading Reference System (AHRS)
- Micro Air Data System (MADS)
- Radio Altimeter System
- Automatic Flight Control System (AFCS)
- Weather Radar System
- Radio Communications and Navigation System
- Flight Management System (FMS)

The system displays attitude, heading, vertical speed, CAS/MACH, barometric and radio altitudes, as well as course, radio bearing, course deviation, vertical deviation, TO/FROM indications and DME distance. Lighted annunciators denote selected flight modes and decision height. Pitch and roll computed steering commands are displayed by steering pointers on the PFD's to enable the pilot to reach and/or maintain the desired lateral and vertical flight path.

B. COURSE OBJECTIVES

This course of instruction is abbreviated by design and is intended to be supplemental to the training provided by the OEM or their contracted training provider. This course is designed to provide the maintenance specialist with an overview of the PRIMUS® 2000 Integrated Avionics System and the information necessary to troubleshoot and test the system to the LRU level. Equipment location, LRU function and ground maintenance testing procedures are covered in considerable detail.

C. ARRANGEMENT

Based upon past experience, Honeywell's Commercial Aviation Systems Customer Training Department has arranged the course material in an order of presentation best suited to continuity and ease of comprehension.

D. DURATION

The course is 4.5 days in length, for a total of 36 class hours.

E. STUDENT PREREQUISITES

Students attending this course should be line maintenance specialists, with a background in avionics systems.

II. COURSE CURRICULUM

A. ORIENTATION

1. Welcome
2. Student registration
3. Course description
4. Class policies
5. Distribution of training materials
6. Location of facilities
7. Security

B. SYSTEM DESCRIPTION – Discuss what function the subsystem performs for the flight crew and what the appropriate acronyms stand for.

1. SYSTEM FLOW DIAGRAM
 - a. Electronic Display System (EDS)
 - b. Attitude Heading Reference System (AHRS)
 - c. Inertial Reference System (IRS)
 - d. Micro Air Data System (MADS)
 - e. Radio Altimeter System
 - f. Automatic Flight Control System (AFCS)
 - g. Weather Radar System
 - h. Radio Communications and Navigation System
 - i. Traffic Alert and Collision Avoidance System (TCAS)(option)
 - j. Flight Management System (FMS)
 - k. Global Positioning System (GPS)(option)
 - l. Microwave Landing System (MLS)(option)

2. COMPONENT LOCATIONS DIAGRAM

3. ANTENNA LOCATIONS DIAGRAM

4. COCKPIT LAYOUT DIAGRAM

5. CIRCUIT BREAKER PANEL DIAGRAMS

6. OVERHEAD PANEL DIAGRAM

7. DIGITAL DATA BUSES

- a. Avionics Standard Communications Bus (ASCB) Version C
- b. Radio System Bus (RSB)
- c. Digital Audio Bus
- d. ARINC 429
- e. Collins Commercial Standard Digital Bus (CSDB)
- f. RS-422 Electrical Specification
- g. RS-232 Electrical Specification

C. SUBSYSTEM DESCRIPTION – This section covers each subsystem in detail as to its component description and location, component interface, modes of operation, fault monitoring and fault indications.

1. ELECTRONIC DISPLAY SYSTEM

- a. Electronic Display System Architecture
- b. DU-870 Display Unit
- c. GP-300 Guidance Panel Controller
- d. IC-800 Integrated Avionics Computer
- e. DA-800 Data Acquisition Unit
- f. RM-855 Radio Management Unit
- g. Backup Engine Display
- h. Backup Navigation Display
- i. Reversionary Controller

2. AHZ-800 ATTITUDE HEADING REFERENCE SYSTEM

- a. AHZ-800 Attitude Heading Reference System Architecture
- b. AH-800 Attitude Heading Reference Unit
- c. FX-600 Thin Flux Valve
- d. Memory Module
- e. Tray Alignment Principals

3. LASEREF® III INERTIAL REFERENCE SYSTEM

- a. LASEREF® III Inertial Reference System Architecture
- b. Inertial Reference Unit
- c. Mode Select Unit
- d. Initialization Requirements

4. ADZ-840 AIR DATA SYSTEM

- a. ADZ-840 Air Data System Architecture
- b. GP-300 Guidance Panel Controller
- c. AZ-840 Micro Air Data Computer

5. AA-300 RADIO ALTIMETER SYSTEM

- a. AA-300 Radio Altimeter System Architecture
- b. RT-300 Radio Altimeter Receiver Transmitter
- c. AT-300 Radio Altimeter Antenna

6. DIGITAL AUTOMATIC FLIGHT CONTROL SYSTEM

- a. Digital Automatic Flight Control System Architecture
- b. IC-800 Integrated Avionics Computer
- c. GP-300 Guidance Panel Controller
- d. SM-200A Servo Drive and SB-201A Bracket

7. PRIMUS® 650 WEATHER RADAR SYSTEM

- a. PRIMUS® 650 Weather Radar System Architecture
- b. WU-650 Weather Radar Receiver Transmitter Antenna
- c. Maximum Permissible Exposure Level (MPEL)

8. SRZ-851 INTEGRATED RADIO SYSTEM

- a. Integrated Radio System Architecture
- b. RM-855B Radio Management Unit
- c. CDH-850 Clearance Delivery Control Display Head
- d. AV-850A Audio Control Unit
- e. RCZ-851 Integrated Communications Unit
- f. RNZ-851 Integrated Navigation Unit
- g. AT-860 ADF Combined Sense/Loop Antenna
- h. ML-851 Receiver (option)
- i. Radio System Aircraft Maintenance Mode (AMM)

9. TRAFFIC ALERT and COLLISION AVOIDANCE SYSTEM (TCAS II)

- a. TCAS II System Architecture
- b. RT-910 TCAS Computer
- c. AT-910 Directional Antenna
- d. Typical Bottom Omnidirectional Antenna

10. FLIGHT MANAGEMENT SYSTEM

- a. Flight Management System Architecture
- b. IC-800 Integrated Avionics Computer
- c. CD-810 Control Display Unit
- d. DL-900 Data Loader

11. GLOBAL POSITIONING SYSTEM (OPTION)

- a. Global Positioning System Architecture
- b. Global Positioning System Sensor Unit
- c. Antenna

- D. GROUND MAINTENANCE TESTS & TROUBLESHOOTING**
 - 1. SYSTEM PAGES & CAS MESSAGES**
 - 2. NAV DATABASE & CUSTOM DATABASE LOADING**
 - 3. DOWNLOAD OF TREND & EXCEEDANCE RECORDINGS**
 - 4. INTEGRATED MAINTENANCE TEST (IMT)**
 - 5. CONVENTIONAL MAINTENANCE TESTING (NO IMT)**
 - 6. SRZ-851 INTEGRATED RADIO SYSTEM TESTS**
 - 7. PRIMUS® 650 WEATHER RADAR SYSTEM TEST**