

Publications and Training Solutions

Course Syllabus: 523-0807756

COURSE TITLE: Cessna CJ Series of Aircraft Pro Line 21
Level I Operations & Flight Line Maintenance

PREREQUISITES: Students should have basic knowledge of aircraft avionics systems and a working command of the English language (interpreters are available for special cases).

PURPOSE: This course provides line maintenance personnel with training to operate and perform flightline maintenance for the Pro Line 21 System.

This course is designed to teach troubleshooting for replacement of line replacement units (LRUs) and does not include internal maintenance of any component.

The Pro Line 21 System consists of the LRUs identified in the section titled EQUIPMENT TYPE by nomenclature and part number, including associated peripheral equipment identified as deliverable hardware.

OBJECTIVES: Upon completing this course, the student will be able to:

1. Provide an overall understanding of Pro Line 21 Avionics Principles and Operation.
2. Identify System Components and the Functional/Operational Characteristics of each LRU.
3. Identify Typical Aircraft System Interface/System Architecture.
4. Perform Fault Isolation to a faulty LRU using Built-In Maintenance Diagnostics.

COURSE LENGTH: 5 Days

TRAINING DEVICES:

1. Special Test Equipment
 - a. Cessna Citation Test Rig, Cedar Rapids (if available)

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TRAINING MATERIALS:

1. PowerPoint Presentation with LCD/Box Light projector
2. Student Guide – Flash drive (pdf) – Training Presentation
Information Sheets

REFERENCES:

- | | |
|--|-------------|
| 1. Cessna Citation CJ1, CJ2 Avionics System Manual | 523-0778454 |
| 2. Cessna Citation CJ1, CJ2 Avionics System Diagnostic Guide | 523-0778460 |
| 3. Cessna Citation CJ1, CJ2 Operator's Guide | 523-0780351 |
| 4. Cessna Citation CJ1+, CJ2+, CJ3 Avionics System Manual | 523-0806482 |
| 5. Cessna Citation CJ1+, CJ2+, CJ3 Diagnostic Guide | 523-0806483 |
| 6. Cessna Citation CJ1+, CJ2+, CJ3 Operator's Guide | 523-0806480 |

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COURSE OUTLINE

0. Welcome & Introductions

- A. Course Overview
 - i. Welcome
 - ii. Student Registration
- B. Course Description and Objectives

1. Data Bus

- A. Why We Use Data Buses
- B. ARINC Data Buses
 - i. ARINC 429
 - ii. ARINC 453

2. Integrated Avionics Processing System (IAPS)

- A. Overview
- B. System Architecture
- C. Integrated Card Cage (ICC)
- D. Power Supply Module (PWR)
- E. IAPS Environmental Controller (IEC)
- F. Input/Output Concentrator (IOC)
- G. Maintenance Diagnostic Computer (MDC)
- H. Configuration Strapping Unit (CSU)
- I. Detailed Functional Theory
 - i. IAPS Power Distribution
 - ii. Temperature Monitoring
 - iii. Overheat Reporting
 - iv. Power Supply Inhibit
 - v. CSU Detailed Theory

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- J. Maintenance and Troubleshooting
 - i. PWR Fault Indications
 - ii. IEC Fault Indications
 - iii. Status Messages
 - iv. Diagnostics
- 3. Maintenance Diagnostics**
 - A. Overview
 - B. Maintenance Diagnostic Computer (MDC)
- 4. Electronic Flight Instrument System (EFIS)**
 - A. Overview
 - B. Adaptive Flight Display
 - i. Primary Flight Display (PFD)
 - ii. Multifunction Display (MFD)
 - C. Display Control Panel (DCP)
- 5. Integrated Flight Information System (IFIS)**
 - A. Overview
 - B. File Server Unit (FSU)
 - i. File Server Applications
 - ii. Enhanced Map Functions
 - iii. Electronic Charts
 - iv. Graphical Weather
 - C. External Compensation Unit (ECU)
 - D. Encrypted Application Key (EAK)
 - E. Electronic Charts Region Access Keys
 - F. Maintenance and Troubleshooting
 - i. Database Effective Dates

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6. Engine Indicating System (EIS)

- A. Overview
- B. Data Concentrator Unit (DCU)
- C. EIS/MFD Indications
 - i. Normal
 - ii. Transient
 - iii. Redline
 - iv. Compressed
 - v. Comparators

7. Air Data System (ADS)

- A. Overview
- B. Air Data Computer (ADC)
- C. Maintenance and Troubleshooting
 - i. PFD Red Flags
 - ii. PFD Source Reversion
 - iii. Diagnostics

8. Attitude Heading System (AHS)

- A. Overview
- B. Attitude Heading Computer (AHC)
- C. External Compensation Unit (ECU)
- D. Flux Detector Unit (FDU)
- E. Modes of Operation
 - i. Normal Mode
 - ii. Basic Mode
 - iii. Slaved Mode
 - iv. DG Mode

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- F. Maintenance and Troubleshooting
 - i. Diagnostics
 - ii. Post Installation Check
 - iii. Compass Compensation Procedure
 - iv. Automatic Leveling Procedure
- 9. Flight Guidance System (FGS)**
 - A. Overview
 - B. Flight Guidance Computers (FGC)
 - C. Autopilot Panel (APP)
 - D. Mode Select Panel (MSP)
 - E. Primary Servos (SVO)
 - F. FGS Operation
 - i. Dual Flight Guidance
 - ii. FGS Controls
 - G. Autopilot and Yaw Damper
- 10. Flight Management System (FMS)**
 - A. Overview
 - B. Flight Management Computer (FMC)
 - C. Control Display Unit (CDU)
 - D. Database Unit (DBU)
 - E. Flight Management Data Base Operations
 - i. 28 Day Database Load Procedure
- 11. Database Loading Operations**
 - A. Overview
 - B. Data Base Unit (DBU)
 - C. Personal Computer Dataloader (PCD)
 - D. Collins Portable Access Software (CPAS)

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12. Radio Sensor System (RSS)

- A. Overview
- B. Radio Tuning Unit (RTU)
- C. VHF Comm Receiver/Transmitter (VHF)
- D. VOR/ILS/MB/ADF Receiver (NAV)

- E. Distance Measuring Equipment (DME)
- F. Mode S Transponder (TDR-94D) with TCAS
- G. Radio Altimeter (ALT)
- H. Maintenance and Troubleshooting

13. Weather Radar (WXR)

- A. Overview
- B. Receiver/Transmitter Assembly (RTA)
- C. Display Control Panel (DCP)
- D. Weather Radar Fundamentals
- E. Maintenance and Troubleshooting
 - i. Radome Maintenance
 - ii. Flight Line Diagnostic Procedures

14. Summary – Review - Critique

- A. Test
- B. Critiques

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EQUIPMENT	NOMENCLATURE	PART NUMBER
IAPS Card Cage	ICC-3XX1	822-1459-001
IAPS Environmental Controller	IEC-3001	822-1167-001
IAPS Power Supply	PWR-3000	822-1137-001
I/O Concentrator	IOC-X1X0	822-1130-101, -151 822-2065-001 822-1361-401, -403, -410
Options Control Module	OCM-3100	822-1484-2XX
Maintenance Diagnostic Computer	MDC-3110	822-1987-00X
Configuration Strapping Unit	CSU-3000	822-1128-001
Configuration Strapping Unit	CSU-3100	822-1363-002
Adaptive Flight Display (PFD, MFD)	AFD-3010	822-1084-102, -104, -108, -110, -120, -202, -206, -208, -506
Adaptive Flight Display (MFD)	AFD-3010E	822-1753-120, -506
Course Heading Panel	CHP-3000	822-1279-002
Cursor Knob Panel	CKP-3000	822-1281-002
Cursor Control Panel	CCP-3000	822-1746-102
Display Control Panel (without AUTOTILT)	DCP-3000	822-1134-002
Display Control Panel (with AUTOTILT)	DCP-3000	822-1134-102
Display Control Panel (without AUTOTILT)	DCP-3030	822-1828-102
Display Control Panel (with AUTOTILT)	DCP-3030	822-1828-002
Data Concentrator Unit	DCU-3010	822-1278-001, -002
Data Concentrator Unit	DCU-3001	822-1483-201, -250
Air Data Computer	ADC-3000	822-1109-002, -004, -014
Attitude Heading Computer	AHC-3000	822-1110-002

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EQUIPMENT	NOMENCLATURE	PART NUMBER
External Compensation Unit	ECU-3000	822-1200-003
Flux Detector Unit	FDU-3000	822-1193-001
Flight Guidance Computer	FGC-3000	822-1108-018, -118, -033, -218, -222
Mode Select Panel	MSP-85	622-6209-019, -020
Autopilot Panel	APP-85	622-6208-223, -227
Elevator, Rudder, Aileron Servo	SVO-3000	822-1168-001, -002
Control Display Unit	CDU-3000	822-0884-362
Flight Management Computer	FMC-3000	822-0883-015, -020
Data Base Unit	DBU-5000	822-2215-602
File Server Unit	FSU-5010	822-1543-001, -101
Radio Altimeter	ALT-4000	822-0615-002
Distance Measuring Equipment	DME-4000	822-1466-001
Global Positioning System Receiver	GPS-4000A	822-1377-001
HF Transceiver	HF-9031A	822-0101-002
HF Antenna Coupler	HF-9041	622-8114-002
VHF Navigation Receiver	NAV-4000	822-1465-001
VHF Navigation Receiver	NAV-4500	822-1579-001
Radio Tuning Unit	RTU-4210	822-0836-434
Radio Tuning Unit	RTU-4220	822-0730-434
Mode S Transponder	TDR-94D	622-9210-006, -007
TCAS II Transceiver	TTR-4000	822-1294-001, -002
VHF Communication Transceiver	VHF-4000	822-1468-102, -302
Radio Interface Unit	RIU-4010	822-1863-001

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EQUIPMENT	NOMENCLATURE	PART NUMBER
Radio Interface Unit	RIU-4110	822-1864-001
Receiver/Transmitter Antenna	RTA-800	822-1050-004
Receiver/Transmitter Antenna (12 inch with turbulence detection)	RTA-852	622-8439-004