Publications and Training Solutions
Course Syllabus: 523-0820584

COURSE TITLE: Pro Line 21™ – Retrofit
Operator/Pilot Training

PREREQUISITES:

Students should have a basic knowledge of aircraft avionics systems and a working command of the English language. Students should be familiar with MS Windows® based Operating Systems.

PURPOSE:

This course provides training to familiarize pilots with the functionality of the Pro Line 21™ retrofit instrumentation.

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

1. Identify Pro Line 21 Instrumentation.
2. Comprehend how Pro Line 21 components function in unison to provide the pilot flight information.
3. Perform the steps to:
    a. Power up the Flight Management System (FMS)
    b. Build a Flight Plan
    c. Save and Load a Flight Plan
    d. Enter Performance Data
    e. Conduct Enroute Procedures
    f. Execute a Missed Approach Procedure

COURSE LENGTH: 5 Hours

REFERENCES:

1. Pro Line 21 Major Retrofit/Integrated Display System Operator's Guide 523-0806497
2. Pro Line 21 Major Retrofit/Integrated Display System with Synthetic Vision Operator's Guide   523-0821232
3. Pro Line 21 Major Retrofit/Integrated Display System with Synthetic Vision and ADS-B Operator's Guide   523-0822966

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COURSE OUTLINE

0. Welcome & Introductions

    A. Welcome to Rockwell Collins e-Learning

1. Primary Flight Display (PFD)

    A. Introduction

    B. Primary Flight Display (PFD)

        i. Operation

        ii. Theory of Operation

    C. Display Control Panel (DCP)

        i. Operation

    D. Summary/Test

    E. Navigation/Bearing (NAV)/(BRG) Operation Procedures (Guided Practice / Assessment)

        i. Select a Navigation Source

        ii. Select a Bearing Source

2. Multi-Function Display (MFD)

    A. Introduction

    B. Multi-Function Display (MFD)

        i. Operation

        ii. Theory of Operation

    C. Display Control Panel (DCP)

        i. Description

    D. Summary/Test

3. Integrated Flight Information System (IFIS)

    A. Introduction to IFIS-5000

        i. Key Performance Features

        ii. Preconditions

    B. IFIS Line Replaceable Unit (LRU) Descriptions

        i. File Server Unit (FSU)

        ii. Adaptive Flight Display (AFD)

        iii. Cursor Control Panel (CCP)

        iv. External Compensation Unit (ECU)

        v. XM Weather Receiver (XMWR) and Antenna

    C. IFIS Operations

        i. CCP Controls and Functions

    D. IFIS Theory of Operation

    E. Summary/Test

4. Radio Sensor System (RSS)

    A. Introduction

    B. Tuning Description

        i. Control Display Unit (CDU)

    C. CDU Familiarization

        i. Operation

    D. RSS Theory of Operation

    E. Summary/Test

5. Weather Radar System (WXR)

    A. Introduction

    B. How Radar Works

        i. Factors

        ii. Thunderstorms

        iii. Reflection

        iv. Calibrated Gain

    C. WXR Description

       i.   Receiver/Transmitter Antenna (RTA)

      ii.   Display Control Panel (DCP)

          1. DCP Controls

  D. Turbulence WXR Theory of Operation

  E. Summary/Test

6. **Flight Management System (FMS)**

  A. Overview (Video)

  B. Introduction

  C. FMS Familiarization

       i.   CDU Operation

      ii.   FMS Theory of Operation

     iii.   Summary/Test

  D. Preflight (Video)

  E. FMS Power-Up Initialization Procedures (Guided Practice / Assessment)

       i.   CDU Power-Up Page

      ii.   Check for a Current NAV Database

     iii.   Swap the Current and Second NAV Database

     iv.   Synchronize FMS1 and FMS2

      v.   Initialize the FMS Position

  F. Build a Flight Plan Procedures (Guided Practice / Assessment)

       i.   Enter the Departure Airport

      ii.   Enter the Destination Airport

     iii.   Enter an Alternate Airport

     iv.   Enter a Waypoint

      v.   Enter an Airway

     vi.   Delete a Flight Plan Discontinuity

      vii.   Enter a Delete Command

     viii.   Enter the Departure Runway

      ix.   Enter the Standard Instrument Departure (SID)

       x.   Enter the Destination Approach & Transition

      xi.   View the Flight Plan on the Plan Map

      xii.   View (other) Airport Data

G. Approaches (Video)

H. Save and Load a Flight Plan Procedures (Guided Practice / Assessment)

       i.   Save a Flight Plan to a Pilot Route List

      ii.   Copy the Active Flight Plan to the Second Flight Plan

     iii.   Activate the Second Flight Plan

I. Uploading Performance Data Procedures (Guided Practice / Assessment)

       i.   Enter the Cruise Altitude

      ii.   Enter the Passenger Weight

     iii.   Enter the Cargo Weight

     iv.   Check the Total Fuel Onboard

J. Enroute Procedures (Guided Practice / Assessment)

       i.   View the Legs Page

      ii.   Delete a Flight Plan Discontinuity

     iii.   Enter a Hold

     iv.   Modify a Hold

      v.   Insert a Direct-TO Waypoint

     vi.   Insert a Radial Fix or Course Intercept

     vii.   Insert a Radial and Distance Fix Waypoint

    viii.   Insert an Off Airway Waypoint

K. Missed Approach Procedures (Guided Practice / Assessment)

  i. View the Missed Approach

  ii. Sequence to the Missed Approach

  iii. Sequence to the Alternate

7. **Satellite Based Augmentation System (SBAS)**

 A. SBAS Operations

  i. Introduction

  ii. FMS Functionality

   1. FMS Lateral Guidance

   2. FMS Vertical Guidance

  iii. SBAS-Vertical Navigation (VNAV) Approaches

  iv. Localizer Performance and Vertical Guidance (LPV) Approaches

  v. Baro-VNAV Approaches

  vi. Loss of Integrity

  vii. LPV vs Baro-VNAV

  viii. Limitations

  ix. Summary/Test

 B. SBAS Approaches and Vertical Guidance

  i. Introduction

  ii. SBAS Description

   1. Wide Area Augmentation System (WAAS)

  iii. Service Providers

  iv. SBAS Equipment

  v. SBAS Approaches

 C. SBAS FMS Updates

  i. Global Navigation Satellite System (GNSS) Page

  ii. Flight Plan (FPLN) Page

        iii.   Arrival Pages

        iv.   MFD Display Menu

        v.   CDU Messages

        vi.   Summary/Test

   D. SBAS Scenario

        i.   Perform an LPV Approach

8. Database Unit (DBU)

   A. Introduction to DBU-5000

   B. Overview

   C. Theory of Operation

   D. Saving Data to a USB Memory Device

   E. Database Types

        i.   Acquiring Databases – Rockwell Collins Website

        ii.   Acquiring Databases – Jeppesen CD-ROM

        iii.   Acquiring Databases – Recommended Practices

   F. DBU-5000 Operations via the CDU

        i.   Load LRU Data Files

        ii.   Refresh List of Available LRUs

        iii.   Refresh LRU List

        iv.   Update an LRU

   G. DBU-5000 Enhanced Operations

   H. Multipurpose Control Display Unit (MCDU) Menu Pages Introduction

        i.   Display DBU Version

        ii.   Display Error Log Information

        iii.   Write Error Log Information

   I. Summary/Test

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EQUIPMENT TYPE:

EQUIPMENT	NOMENCLATURE	PART NUMBER
Adaptive Flight Display	AFD-3010E	822-1753-931 / 941 / 956 / 960
Cursor Control Panel	CCP-3000	822-1746-001 / 002 / 012 / 102
Display Control Panel	DCP-3000	822-1134-002 / 102 / 202 / 302
File Server Unit	FSU-5010	822-1543-101
External Compensation Unit	ECU-3000	822-1200-209 / 998
Control Display Unit	CDU-6200	822-1485-066
Receiver Transmitter Antenna	RTA-848	622-9303-004
Receiver Transmitter Antenna	RTA-852	622-8439-004
Receiver Transmitter Antenna	RTA-858	622-8441-004
Data Base Unit	DBU-5000	822-2215-202