

# Publications and Training Solutions

## Course Syllabus: 523-0810513

**COURSE TITLE:** Multiscan™ Weather Radar (WXR-2100)  
Flight Line Maintenance

**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 line maintenance personnel with training to operate and perform flight line maintenance for the WXR-2100 MultiScan™ Weather Radar.

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

1. Provide an overall understanding of WXR-2100 MultiScan™ Weather Radar principles and operation.
2. Identify system components and the functional/operational characteristics of each Line Replaceable Unit (LRU).
3. Identify typical WXR-2100 MultiScan™ Weather Radar system interface/system architecture.
4. Identify troubleshooting techniques to isolation a faulty LRU.

**COURSE LENGTH:** 2 Hours

**REFERENCES:**

- |   |             |
|---|-------------|
| 1. WRT-2100 Receiver-Transmitter Component Maintenance Manual                       | 523-0780942 |
| 2. WXR-2100 MultiScan™ Weather Radar System Installation Manual                     | 523-0780943 |
| 3. Collins WXR-2100 MultiScan™ Radar Fully Automatic Weather Radar Operator's Guide | 523-0780944 |

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### COURSE OUTLINE

#### 0. Introduction

- A. Welcome To Rockwell Collins eLearning

#### 1. WXR-2100 Overview

- A. Introduction
- B. System Capabilities and Characteristics
- C. WXR-2100 MultiScan™ Radar System LRUs
  - i. WRT-2100 Receiver/Transmitter
  - ii. WCP-70X Control Panels
    - 1. Boeing WCP-701 Single System
    - 2. Boeing WCP-702 Dual System
    - 3. Airbus WCP-102 Dual Control
  - iii. Antenna Pedestal
  - iv. Antenna Flat Plate
- D. Safety
- E. Summary/Test

#### 2. Aviation Weather

- A. Introduction
- B. Ideal Radar Beam
- C. Dual-beam System
- D. Temperature Based Gain
- E. Ground Clutter Suppression System
- F. Theory of Operation
  - i. Weather Radar Display
  - ii. Weather Reflectivity
  - iii. Thunderstorms

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- iv. Reflectivity Settings
- v. Tilt Settings
- vi. Non-Reflective Weather

### G. Summary/Test

## **3. How Radar Works**

- A. Introduction
- B. Weather Radar Penetration
- C. Calibrated Gain
- D. Antenna Characteristics
  - i. Flat Plate Antennas
- E. Radar Beam
  - i. Beam Attenuation
  - ii. Sensitivity Time Control
  - iii. Long Range Color Enhancement
- F. Southern Airways Flight 242
- G. Radome
- H. Doppler Turbulence Protection
- I. Windshear
- J. Airbus Specifics
- K. Boeing Specifics
- L. Alien Radar
- M. Summary/Test

## **4. Automatic Mode**

- A. Introduction
- B. Flight Deck Panels
  - i. Airbus – System Capabilities and Characteristics

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ii. Boeing - System Capabilities and Characteristics

C. Operation

i. Initialization

ii. Threat Weather

iii. Overscan Protection

iv. Overflight Protection

v. Windshear Detection Features

D. Summary/Test

### **5. Manual Mode**

A. Introduction

B. Flight Deck Panels

i. Airbus – System Capabilities and Characteristics

ii. Boeing - System Capabilities and Characteristics

C. Operation

i. Tilt Settings

1. Low Altitude Tilt

2. Takeoff Tilt

3. Descent Tilt

4. Mid-Altitude Tilt

5. High Altitude Tilt

ii. Overscan

D. Summary/Test

### **6. Data Buses and Discretes**

A. Introduction

B. ARINC 429 Data Buses

C. Discretes

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D. Summary/Test

#### **7. Troubleshooting**

- A. Introduction
- B. No Tilt Annunciation
- C. Display Failure
- D. Radio Altimeter Failure
- E. Weather Radar Failure
- F. Summary/Test

#### **EQUIPMENT TYPE:**

<b>EQUIPMENT</b>	<b>NOMENCLATURE</b>	<b>PART NUMBER</b>
Receiver/Transmitter (Boeing)	WRT-2100	822-1710-001 / 002 / 301 / 311
Receiver/Transmitter (Airbus)	WRT-2100	822-1710-201 / 202 / 203 / 204 / 213 / 214 / 401 / 411
Control Panel	WCP-701	622-5129-801 / 802
Control Panel	WCP-702	622-5130-801 / 820 / 830
Flat Plate Antenna Radiator	WFA-701X	622-5137-601
Antenna Mount	WMA-701X	622-5135-801 / 802 / 803 / 821 / 822
Antenna Mount	WMA-702X	622-5136-801 / 802 / 803 / 822
R/T Single X-Band Mount	WMT-701X	622-5133-007 / 209
R/T Dual X-Band Mount	WMT-702X	622-5134-064 / 066